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AGRICULTURAL RESEARCH INSTITUTE
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TRANSACTIONS

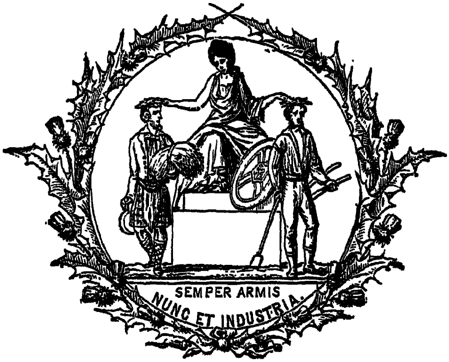
OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

WITH

AN ABSTRACT OF THE PROCEEDINGS AT BOARD AND GENERAL
MEETINGS, AND THE PREMIUMS OFFERED BY
THE SOCIETY IN 1897

PUBLISHED ANNUALLY



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HER MAJESTY
QUEEN VICTORIA
1837
1897

TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

Queen and Farmer

It is a singularly happy association which is suggested by these words. Not at once does one realise all that it betokens, all that it means, and has long meant to a large section of her Majesty's subjects. It has exercised an influence in the directing of agricultural progress which can hardly be over-estimated. It has been a source of the warmest gratification to the agriculturists of the United Kingdom, who are proud to claim their Queen as "a farmer like themselves." There is no class in the community more deservedly noted for their loyalty and good citizenship than the owners and tillers of the soil. They love their Queen and country; they love their Queen all the more fervently that she has associated herself so intimately with the practical interests of their calling.

On the 20th of June next the long and glorious reign of Queen Victoria will have completed its sixtieth year, a period longer than the reign of any other British Sovereign. It would be out of place here to attempt a portrayal of the life and character of our beloved Queen. Equally inappropriate would it be to essay an estimate of the unexampled industrial, educational, and social progress of the Victorian era. All this will be done fittingly by a thousand pens when the celebration of the "Diamond Jubilee" comes nearer to hand; more efficiently still will it be accomplished when in the fulness of time the historian throws his discriminating eye over the longest and most brilliant reign in the history of the British Empire. But in the official volume of the Highland and Agricultural Society of Scotland it would seem to be natural that an opportunity should be sought to express in a few words the peculiarly warm interest which agriculturists feel in the approaching celebration of the Diamond Jubilee of the reign of Queen Victoria.

Steps are being taken in all classes and sections of the community to commemorate appropriately the long reign of her Majesty. Among the first to take definite action in the preparations for the Diamond Jubilee celebrations, our own Society has resolved to mark its interest in the event by presenting a dutiful address to her Majesty, and by contributing the sum of £500 to a fund being raised for the endowment of a Royal Scottish Agricultural Benevolent Institution. In taking this course the Society has been influenced by an appreciative recollection of her Majesty's own handsome liberality and warm sympathy towards works of a benevolent character.

It is most natural that agriculturists should enter into these celebrations with more than ordinary feeling and zest, most natural that they should desire to offer grateful homage to a Sovereign who has in a very real and special manner identified herself with the great industry to which their lives are devoted. For a long period of time Queen Victoria has been herself one of the most extensive farmers in the United Kingdom. At the present day, in different holdings at Windsor, Osborne, and Balmoral, her Majesty occupies and farms several thousand acres of land, and, besides other varieties of stock, maintains five or six distinct herds of pure-bred cattle. The writer has at various times had the privilege of seeing most of the Royal Farms, and by the gracious permission of her Majesty he is enabled to introduce here a few notes regarding them.

Most of the Royal Farms, as they exist to-day, were organised and established nearly half a century ago by the late Prince Consort. It was a happy inspiration which led his Royal

"THE FOUR GENERATIONS"

Her Majesty Queen Victoria, and their Royal Highnesses the Prince of Wales, the Duke of York, and Prince Edward of York.

From Photograph by W. and D. Downey,
Ebury Street, London, taken 1894.

Highness to assume the *rôle* of a practical farmer. It was one of many efforts on the part of an able and sagacious man to give good service to his adopted country. It proved an excellent means to a worthy end. It brought the Prince into close community and sympathetic intercourse with the agricultural classes of the kingdom, and enabled him the more effectually to promote their best interests, materially and socially. It is but natural that the agriculturists of this country should hold in warm reverence the memory of the Prince Consort, for they had in his Royal Highness a devoted champion, a wise councillor, a true-hearted friend. Since the death of Prince Albert, on the 14th of December 1861, the Royal Farms have been maintained by her Majesty the Queen, almost as originally organised by his Royal Highness, and they form to-day a fitting memorial of the foresight, public spirit, and good citizenship of a noble Prince who with unflagging zeal, consummate judgment and tact strove to promote the varied interests of the people amongst whom his lot was cast. It was the loving desire of her Majesty the Queen that the farms occupied by the Prince Consort, as well as the other agricultural relations in which he took so much interest, should all be as fully and completely as possible maintained; and, with much advantage to the agriculture of the country, those entrusted with her Majesty's commands have performed their duties most faithfully and successfully. It was declared by a high authority, the late Mr John Chalmers Morton, that the Prince Consort "stood alone in British agriculture, as in himself the exemplar and exponent of a greater diversity of farm practice and experience than any other single agriculturist." That was true then of his Royal Highness; it is true now of our Gracious Queen.

The farms at Windsor occupied by her Majesty the Queen are the Home or Dairy Farm, the Shaw Farm, and the Flemish Farm. The first forms part of the Home Park attached to Windsor Castle, and includes over 400 acres of fairly good pasture-land. The Home Farm is devoted to the up-keep of the Royal Dairy. A choice stock of about sixty cows is maintained, one-half consisting of pure-bred Jerseys, and the other of cross-bred Shorthorns.

The Dairy Homestead, which was erected by the Prince Consort in 1852, is commodious, handsome, and admirably arranged. The feature which excites most interest and admiration is the truly royal cowhouse. It is a magnificent building, accommodating sixty cows. As indicated in the section in fig. 1, there are two rows of stalls, with the cows face to face, and a wide raised gangway down the centre. The cows stand in pairs, each pair in a stall 9 feet wide, slate partitions, *c*, being used to divide the stalls. In front of each cow there is an iron trough, divided into three compartments, the central division being for water. The raised gangway, *a*, has a stone floor with slabs of slate on either side of it. The pipes, *d*, supplying water to the drinking-troughs lie below the passage floor. Asphalt forms the flooring. The gutter, *b*, presents a sloping cross section allowing of the easy escape of water, which falls at intervals into the drain shown in section below it. With its long row of sleek dainty Jersey cows on the one side, and its bulkier line of reds and roans on the other, and with its spacious passages and lofty roof, the cowhouse is certainly one of the finest sights on the royal farms. One is not surprised to be told

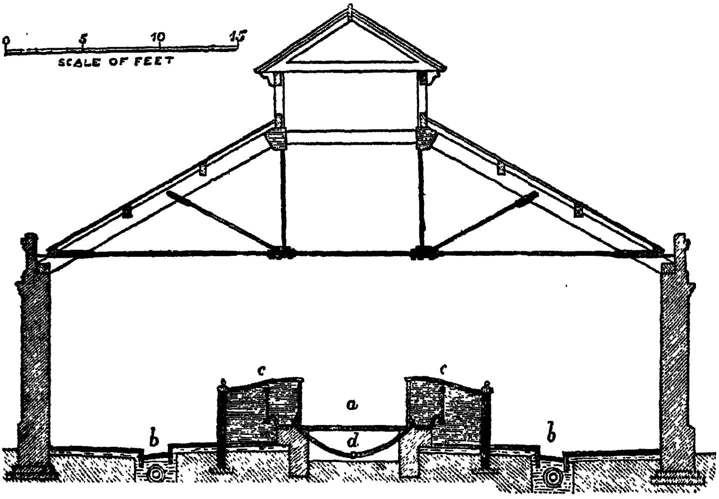

Fig. 1.—*Section of cowhouse.*

that when it was completed the Prince Consort declared he possessed the best cowhouse in the world.

There are extensive piggeries in the Dairy Homestead, and in these large and first-class stocks of Berkshire and Prince Albert White pigs are kept. The latter strain of pigs traces descent from the stocks of Earl Ducie, Mr Wiley of Yorkshire, and Lord Moreton of Sarsden. Near at hand are the well-filled poultry-yards, and a little further away the royal kennels.

In comfortable quarters at the Dairy Farm there is a curious collection of foreign and other animals which have been gifted to her Majesty. Chief amongst these is a North American bison, presented to the Queen by the Marquis of Lorne when Governor-General of Canada—a splendid specimen, picturesque, fierce, and fearless as ever, and withal apparently not unhappy in his confinement. Near by this prairie-king is a lovely little cream-coloured pony, much petted by her Majesty. It was gifted by Sanger, of circus fame, and never fails to be admired by visitors. In another compartment there are a Brahmin bull and cow, presented to her Majesty about a year ago by Munshi Abdul Karim. This pair, although suffering somewhat from cold, seem to thrive fairly well, and the cow is now happy with a heifer calf by her side. Other curiosities are cattle from Spain and Zululand, and sheep from Ashantee.

The Royal Dairy (fig. 2) stands a short distance from the Dairy Homestead. An inscription on a panel over the doorway tells the visitor that the dairy was "erected under the supervision of the Prince Consort in the twenty-first year of the reign of her Majesty Queen Victoria." In its exterior the dairy is a fine example of the Renaissance style. The interior is chaste, beautiful, and admirably adapted for its purpose. "The site of the building," wrote Mr J. C. Morton, "is dry gravel; the floor is laid upon brick arches, with an empty space about three feet high below the arches. The external walls are hollow, with ventilation. The drains are of glazed tubular pipes, and provided with means of efficient flushing. The roof is boarded and covered with asphalted felt, over which the laths are nailed for the tiles; the inside of the roof is lathed and plastered, having ceiling joists fixed below which carry the lower ceiling; and the space between the outer and inner lath is ventilated. The floor is laid with tiles of an incised pattern, with a rich majolica border, presenting the appearance of a Turkey carpet, and it is both beautiful to the eye and agreeable to walk upon. Below the tables, and extending their whole length, are reservoirs about two inches deep, laid with tiles, to contain a flowing stream of cold water, and provided with arrangements for filling and emptying. This arrangement preserves the coolness of the room in summer. The walls are covered with tiles of a white ground, carrying a star pattern in mauve colour, and the whole is enclosed by a border of tiles bearing a running pattern in green and white. Several bas-reliefs in majolica are also introduced on the walls, the subjects being agricultural and descriptive of the four seasons. The walls are crowned by a frieze

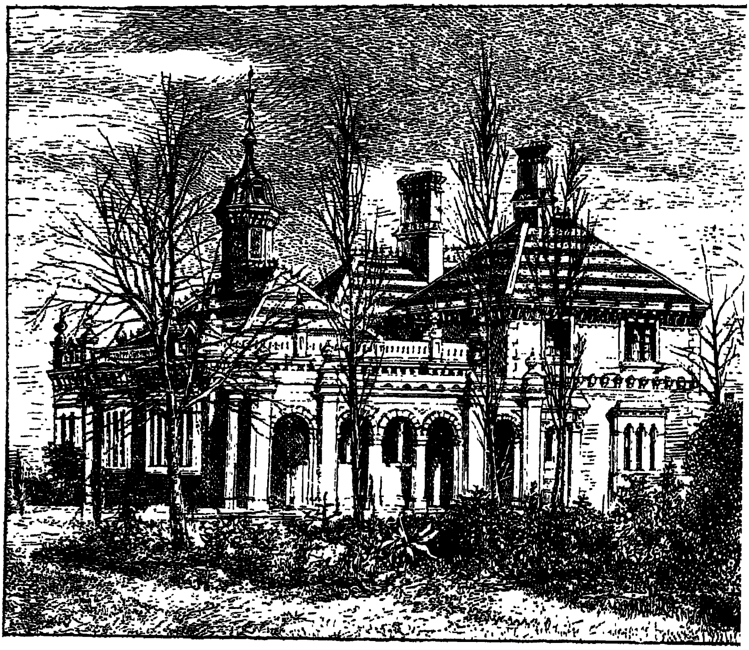

Fig. 2.—*Royal Dairy.*

and cornice, executed in majolica, the former of elaborate and flowing design. Medallions of the Royal Family are introduced, supported by sea-horses, alternating with shields bearing monograms, dolphins, &c. The cornice is enriched by a running pattern in majolica, representing the leaves and fruit of the orange. The sloping part of the ceiling, which extends up to the roof-tie, is painted and enamelled, with a pattern of extreme beauty and delicacy. The soffit or flat part of the ceiling under the roof-tie is filled with majolica panels in the manner of coffers, a number of which are perforated to afford a passage for the air to and from the ventilator above; and the sunken ground of the remaining panels is coloured, so that both present a uniform appearance. At either end of the dairy is a fountain of majolica ware, designed by the late Mr Thomas, rising from a shell supported by a heron and bulrushes. And on the south side of the dairy is a fountain in statuary marble—a water-nymph pouring water from a jar. The tables are all of white marble, the frames and supports being tastefully decorated in colour, with Belgian and Devonshire marbles. The windows have double casements, the inner filled with stained glass, representing daisies and primroses, with a border of may-blossom. These casements open for ventilation, and there is also top ventilation by a syphon ventilator, on 'Watson's principle,' which externally forms a turret, rising from the roof. There are two recesses on the south side, and one on the east side, lined with tiles of an elegant pattern, and fitted up with ornamental racks, on which are exhibited some fine specimens of old china. The roof is supported by six ornamental pillars, on the top of which are clusters of small twisted shafts, carrying the ornamental arches in connection with the ceiling and roof; the pillars and all the splayed parts of the ceiling and mouldings are richly decorated in colour and highly enamelled."

The Shaw Farm, which adjoins the Home Farm, extends to 308 acres,—120 acres arable and the rest in pasture. This farm derives its name from a Frenchman, M. de Shawe, from whom the land was purchased for the Crown nearly two centuries and a half ago. The Prince Consort became tenant of the Shaw and Home Farms in 1849. Her Majesty the Queen is now the tenant of the Shaw Farm, and pays a rent for it to the Commissioners of Woods and Forests.

The Prince Consort erected a commodious homestead on the Shaw Farm and effected many other improvements. The general features of this homestead are shown in fig. 3.

The Flemish Farm is also rented by her Majesty the Queen from the Commissioners of Woods and Forests. It is situated about a mile from the Shaw Farm, and extends to nearly 400 acres, of which about 190 acres are arable. This farm and the Norfolk Farm were established in the time of George III. as examples of what were known as the Norfolk and Flemish systems of farm management; and they were taken over from her Majesty the Queen by the Prince Consort. The Flemish Farm was completely transformed by the Prince; fields rearranged, roads and fences formed, the land thoroughly underdrained, and an excellent new homestead erected. His Royal Highness took a special interest in the designing and erecting of the homestead, which is rightly regarded as one of the finest farm homesteads in the kingdom. The admirable arrangement of this homestead is well shown by the drawings figs. 4 and 5 from Denton's 'Homesteads of England.'

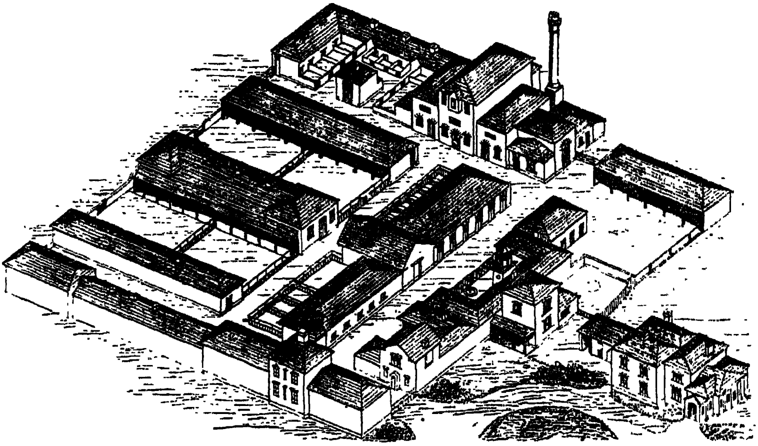

Fig. 3.—*Homestead at the Prince Consort's Shaw Farm.*

The Norfolk Farm, which now forms part of the Windsor

Great Park, likewise underwent much improvement at the hands of the Prince Consort, as did also the Bagshot and Rapley Farms, now in the possession of his Royal Highness the Duke of Connaught.

At the Royal Farms around Windsor her Majesty maintains four herds of pure-bred cattle. There is a herd of Jersey cattle at the Home or Dairy Farm, a herd of Shorthorns at the Shaw Farm, and herds of Hereford and Devon cattle at the Flemish Farm.

Her Majesty's celebrated herd of Shorthorns is of course the chief object of interest at the Shaw Farm. The herd was established by the Prince Consort, and has had a distinguished and most useful career. It usually numbers about eighty or ninety head, and is conducted on thoroughly sound principles. The object is to produce first-class animals of a rent-paying character; and it may be doubted whether this object is attained in a higher degree in any other herd in the kingdom. The herd has perhaps never been in better form than it is at present. The distinguishing features, notably of the young animals, are deep, thick, well-proportioned bodies, great wealth of lean flesh,

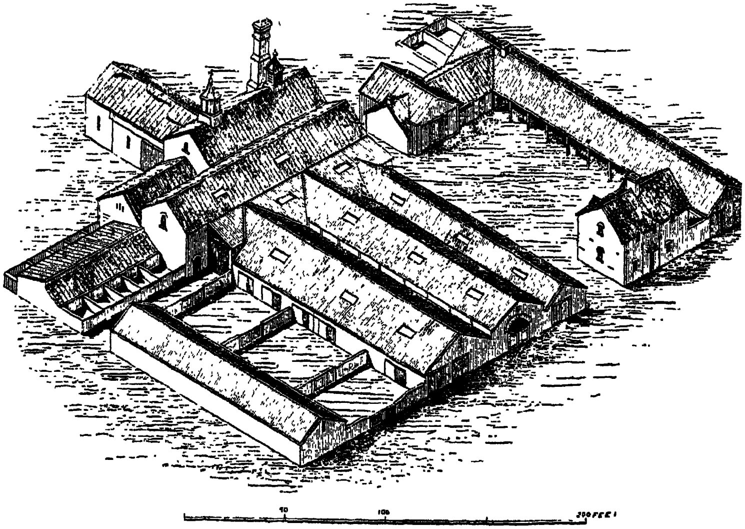

Fig. 4.—*Homestead at the Prince Consort's Flemish Farm.*

short well-set legs, robust constitution, true symmetry, and desirable Shorthorn character.

The principal female strains now in the herd are the "Ruths" from Mr Trethewy's herd in Cornwall, the Sittyton "Nonpareils," descendants of the Sittyton "Broadhooks" family introduced from Lord Lovat's herd at Beaufort, and "Beau Benedict" cows from the Inglewood herd. The most noted sire used in recent years was the famous Sittyton bull "Field-Marshal," 47,870, purchased from Mr Duthie, Collynie, in 1886. That remarkable bull was used for three years, and left an influence on the herd which will be felt in England for many a day.

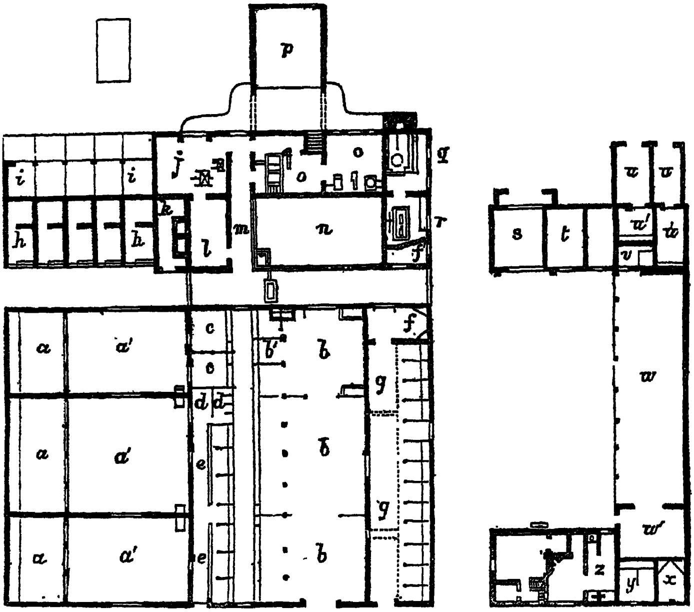

Fig. 5.—*Homestead at the Prince Consort's Flemish Farm—plan.*

a a' Cow-yards open.
b' Loose boxes.
b b Covered yards for young stock.
c c Feeding-boxes.
d d Calves' pens.
e e Cow-stalls.
f Saddlery.
g g Farmhorse stable.
h Piggeries.
i Shed, with liquid-manure tank near it.
j Turnip-cutters.
k Pig-food and cisterns.
l Cut chaff.
m Passage.
n Straw-barn.
o Thrashing-barn, containing meal-mill, oat- and bean-crusher, and cake-mill.
p Sheaf-barn.
q Boiler-house.
r Engine.
s Shed for portable engine.
t Fowls.
u u' Bulls' houses.
v Forge.
w Cart-shed.
w' Implements.
x Loose box.
y Nag stable.
z Cottage.

His great wealth of lean flesh, broad strong loins, wide rib, and robust constitution have been firmly stamped on his descendants at Windsor, and it is not surprising that the great success which attended the use of this Scotch-bred sire in the sunny South should have been followed by a lively demand amongst English breeders for Scotch Shorthorns. "Field-Marshal" returned to Collynie in 1889, and ended his days there.

The present stock bull is "Christmas Present," out of "Nonpareil 21st," and got by "Volunteer," 63,501. He is a well-shaped, thick, heavily fleshed, short-legged bull, and promises to be a very useful sire. He is now to be assisted by "Prince Victor," a very handsome young bull of similar type, bred by Mr Deane-Willis, and full of the best of Sittyton blood.

Herds of choicely bred Hereford and Devon cattle, numbering about thirty each, are kept at the Flemish Farm. In these herds also practical utility has been the guiding principle, and a very high standard of merit is successfully maintained. The Hereford herd contains a large admixture of the "Horace" and "Lord Wilton" blood. A good many of the females now in the herd were either purchased from Mr John Price, Court House, Pembridge, Hereford, or are descended from his stock. The bull at present at the head of the Hereford herd is "Ladas," 17,919, bred by Mr Allan Hughes of Wintercott. He is an exceptionally handsome bull, long, deep, and thick in the frame, and very heavily fleshed.

The Devon cattle show admirable symmetry, fine bone, and excellent cover of flesh. The Quartly and Davy strains are largely and creditably represented, and some of the animals more recently introduced were purchased from Mr Alfred Skinner, Pound, and Mr Thomas Risdon, Washford. The stud bull at present is "Leonard Golsoncott," 2998, a bull of exceptionally high merit, bred by Mr John Risdon of Golsoncott, from whom many of the Quartly and Davy animals in the herd have been purchased.

The Jersey cattle are kept solely for the supply of milk. Many of the heifer calves bred in the herd are reared and retained as cows; and when required, additions are made to the stock by the importation of animals direct from the island of Jersey.

A few Clydesdale horses are kept, mainly for the breeding of draught-horses for the work of the farms. The stallion now in use is a very useful stamp of a "Macgregor" horse, named "M'Quhae," winner of the Champion Clydesdale prize at the Royal Show at Warwick in 1891.

A fairly large stock of sheep is usually kept on the Royal farms at Windsor. There is generally a flock of about 300 Cheviot ewes. These are bought in the autumn at St Boswells, and they are mated with Blackfaced rams. The ewes are well kept all through, and they and their lambs are fed off together in the course of the summer. It has been found inadvisable to retain a breeding flock longer on the land on account of the liability to loss from foot-rot. Feeding-sheep, Hampshires or Southdowns, are bought in as required.

A large number of cattle are fed on the farms, and these and other fat stock are sold by auction at the Flemish Farm in the month of December.

In the leading showyards of the country the Royal herds have met with quite a remarkable measure of success. Besides numerous breed cups, and champion cups for best cow or heifer and best ox or steer, her Majesty has four times won the "Blue Ribbon" of the Smithfield Show—in the years 1883, 1889, 1890, and 1895; while three times—in 1885, 1893, and 1894—an animal from the Royal herds has stood "reserve" for the Smithfield Championship.

For a good many years her Majesty has exhibited no animals except those of her own breeding, and on this account the great success of the Royal stock in the showyard is all the more creditable and noteworthy.

Her Majesty takes a keen interest in the live stock on the Royal Farms. Animals intended for exhibition are drawn out for her Majesty's inspection before leaving home, and their fate in the showyard is learned with appreciative concern.

The Royal Farms and Herds at Windsor are under the able and faithful management of Mr William Tait, who in 1882 succeeded his father, the late Mr Henry Tait, who went from Dunrobin to Windsor in 1858.

The Royal Estates at Osborne were purchased for her Majesty the Queen in 1845 and subsequent years. The property embraces the Manor of Osborne, the Manor of Barton, the farms of Alverston, Woodhouse, and Heathfield, and other smaller properties. It extends to over 2000 acres, of which about 460 acres are in permanent pasture in the beautiful park and grounds around Osborne House, about 350 acres in woodland, and 1200 acres arable and pasture.

The late Prince Consort occupied and farmed the greater part of the land on the Osborne Estate. No sooner did his Royal Highness obtain possession of the land than he set about its improvement, and so extensive and thorough were the improvements the Prince carried out that the character of the property was completely revolutionised. Writing of the property in 1862, Mr J. C. Morton says: "How laborious and continuous the process [of improvement] has been may be gathered from the list and quantities of the principal operations—buildings, roads, drainage, planting—hardly yet completed. Upwards of 400 miles of covered drains have been dug on the estate—264 on the Osborne and Barton portion of it, and upwards of 130 at Alverston,—and besides these many miles of open ditches have been made through the plantations. The buildings have included new mansions, new farm-buildings, new cottages and school, and a new church. A very great length of new roads has been made, including drives for upwards of twenty miles within the boundaries of the estate, commanding every variety of coast and woodland scenery. By a rearrangement of the fields, the farms have been adapted to the best and newest modes of cultivation. A great deal of planting has been done, principally of elms and pines, as avenues; but large numbers also of rare Coniferæ, as specimens, besides evergreens and shrubberies around the House. The estate thus now presents as striking an example as is anywhere to be seen of good land-management; so that in itself, as well as for its connection with the agricultural career of an illustrious man, it deserves the attention of agriculturists." These words show well how thoroughgoing the Prince Consort was as a land-improver, and how advanced, enterprising, and practical as a farmer.

The farms of Barton and Woodhouse are maintained by her Majesty the Queen; and here, as on the other Royal Farms, the system of general management pursued by his Royal Highness is followed as closely as practicable. The Osborne Farms are now under the management of Mr Andrew Slater.

Now a word or two must be said about the Royal Farms at Balmoral, that picturesque Highland home which her Majesty loves so dearly, and which is the centre of so many happy associations for our gracious Queen and her family. In 1847 the Prince Consort purchased the unexpired period of twenty-seven years of a lease of Balmoral, held from the owner, the Earl of Fife, by the late Right Hon. Sir Robert Gordon; and in 1852 the fee-simple of the property was acquired from the Fife Trustees. In 1849 the neighbouring property of Birkhall was purchased for his Royal Highness the Prince of Wales, and about the same time the adjoining estate of Abergeldie was taken on lease. Her Majesty has since purchased Birkhall from the Prince of Wales. In 1878 the Queen purchased the forest of Ballochbuie from the late Colonel Farquharson of Invercauld. Ballochbuie, which adjoins Balmoral on the west, contains perhaps the finest natural pine-forest in Scotland, the timber being famed both for size and quality. Balmoral extends to about 10,000 acres, Birkhall to 6000 acres, Ballochbuie to 10,000 acres, and Abergeldie to 14,000 acres—in all about 40,000 acres.

Again at Balmoral, as at Windsor and Osborne, the spirit of improvement stalked abroad the moment the Prince Consort got possession of the property. Money was advanced for the draining, trenching, and improvement of waste land, new roads were opened up and old ones repaired, comfortable cottages and suitable farm-buildings replaced the miserable erections which before provided shelter for man and beast, fences were provided or renewed, and upwards of 1000 acres planted. In more recent years, under the direction of Mr John Michie, who has had charge of the Balmoral forests for sixteen years, a large additional area of ground has been planted, and there are now about 5700 acres of well-stocked woodland on the property. Excellent cottages were provided, some of them with small crofts attached, for tradesmen and labourers, whom the Prince, as a wise landowner would, desired to have settled on his property. Then, early in the day, his Royal Highness, always a vigorous advocate of advanced education, erected schoolhouses and provided well-qualified teachers for the training of the rising generation; and all this was supplemented by the establishing of an excellent library at Balmoral, the joint gift of her Majesty the Queen and the Prince Consort—the library being thrown open not only to tenants and servants, but to all other residenters in the neighbourhood.

The farms on the Balmoral properties held by her Majesty the Queen are Invergelder and Abergeldie Mains. The former is quite a small holding, with only about 60 or 70 acres of arable land. It is used chiefly to maintain the Royal dairy, in which fifteen Ayrshire and cross-bred cows are kept. On this farm a substantial and convenient set of buildings were erected by the late Prince Consort, and in other respects the holding was vastly improved.

Abergeldie Mains embraces about 170 acres of arable land. Here her Majesty's choice herd of Aberdeen-Angus cattle has its home. The herd now numbers about thirty head, and includes representatives of several excellent strains of the breed, notably the "Ericas" from Ballindalloch. One of the most valuable animals in the herd at present is the champion cow "Gentian of Ballindalloch," 19,258, which has won numerous honours for her Majesty, including the Duke of York's medal for the best animal of the breed at the Highland Show at Aberdeen in 1895. "Gentian" is breeding promisingly, and has at foot a bull calf of quite exceptional merit. One of the bulls now at the head of the herd is that very handsome "Erica" bull "Eulenberg," 10,825, from Ballindalloch, which was purchased for her Majesty at Perth in 1894 for 220 guineas. The other stud bull is "Frederick of Abergeldie," 12,533, a well-shaped two-year-old bull bred at Abergeldie Mains, and got by "Eulenberg," 10,825. The herd was founded, and has been maintained, with much enterprise and excellent judgment, and deservedly holds a prominent position amongst the leading Aberdeen-Angus herds. In the showyard it has met with great success, and reflected much credit on her Majesty's Commissioner, the late Dr Profeit, whose successor in the position of Commissioner at Balmoral is Mr James Forbes.

At Birkhall a few grass parks are kept in her Majesty's possession, and are grazed chiefly by ponies. The well-known Hackney stallion, "Vidette II," 4568, has his home at Birkhall. This very handsome horse, now six years old, was bred at Sandringham by the Prince of Wales, from whom he was purchased when a yearling by her Majesty for 160 guineas. He has won numerous prizes, including first at the Aberdeen Highland Show in 1894, and has proved himself a valuable stock getter.

In the busy life of the late Prince Consort there was no more beautiful feature than his most kindly consideration for the comfort and wellbeing of those in his employment. How finely and feelingly these associations have been maintained by her Majesty there is no need to tell! Nowhere in the land is there fuller sympathy or a more kindly or truer bond of union between master and servant than on the Royal Farms. At the Shaw Farm at Windsor winter-evening classes were established for the employees by the Prince Consort. They are still continued, and have been a great boon to those for whom they were provided. At Balmoral, too, as has been stated, much has been done for the education, enlightenment, and comfort of those who reside on the Royal Estates. There, as at Windsor and Osborne, ideal houses have been provided for all ranks and classes of residenters; and over all there is an air of comfort and contentment, an atmosphere of mutual affection and goodwill, delightful to contemplate. In the management of the Royal Estates, and in her intercourse with those who live upon them, as in all other relations of life, her Majesty the Queen sets an example that is in every sense as beautiful as it is noble.

Reference has been made to the gratification and encouragement which the agriculturists of this country derive from the intimate and sympathetic manner in which her Majesty the Queen has identified herself with the practical interests of their industry. Happily the admirable example set in this respect by her Majesty the Queen and the late Prince Consort is being taken up and followed most enthusiastically and worthily by their successors. It is a remarkable fact that every one of the sons of her Majesty the Queen now living has at one time or other occupied the position of an English farmer. It is well known that his Royal Highness the Prince of Wales is one of the most extensive, enterprising, and successful farmers and stock-breeders in the famous agricultural county of Norfolk. While resident in England his Royal Highness the Duke of Edinburgh had his Home Farm at Eastwell Park in Kent; and his Royal Highness the Duke of Connaught now occupies the Bagshot and Rapley Farms, which were held by the Prince Consort, and continued by her Majesty the Queen till 1880. Then, following in the footsteps of his father and grandfather, his Royal Highness the Duke of York has become quite an enthusiastic agriculturist,—not merely a farmer on his own account, but a shrewd, devoted, and public-spirited patron and promoter of the general interests of British agriculture.

But while it is well known that his Royal Highness the Prince of Wales is a large and successful farmer and stock-breeder, it is doubtful if many are aware of how very extensive are the agricultural operations performed and carried on by his Royal Highness. Since the Prince purchased the Norfolk Estate of Sandringham in 1863 he has executed so many improvements upon it that its outward appearance has been completely transformed. Several miles of new roads have been made, many hundreds of acres of woods have been planted, a large area of land has been drained and otherwise improved, the churches on the estate have been restored, commodious and comfortable farmsteads have been built, club-houses and recreation-rooms have been erected for the working men, and, last but not least, excellent cottages and gardens have been provided for the labourers employed on the property. Sandringham is now one of the best equipped properties in England, and his Royal Highness's Home Farms are in every respect models of what such holdings ought to be.

The Prince of Wales occupies two Home Farms, the one at Sandringham and Appleton, and the other at Wolferton. The Sandringham Farm consists of about 800 acres, 640 arable and 160 in permanent grass. The soil is of a chalky character; and the cropping mainly on the famous Norfolk four-course system—wheat, roots, barley, and grass-seeds. The chief object is to get as many sheep and bullocks grazed as possible, the stock being fattened off by the aid of cake and meal.

The Wolferton Farm extends to about 700 acres, including about 500 acres of permanent grass and marsh land. On the arable land the main crops are wheat, mangels, oats, and grass-seeds.

It has been remarked that the Prince of Wales is an extensive stock-breeder. The truth of this will be realised from the statement of the fact that on the Sandringham Home Farms there is a collection of live-stock—horses, cattle, and sheep—which, for variety, interest, character, and value, has no equal in this or any other country. Reversing the above order, there are a pure-bred flock of Southdown sheep, pure-bred herds of Shorthorn, Jersey, and Dexter-Kerry cattle, and choicely bred studs of Shire, Hackney, and Thorough-bred horses. And again it is the bare truth to say that each in its own way has attained to the very highest rank amongst its compeers.

The Southdown flock, founded soon after the purchase of Sandringham, has frequently supplied the winners of the highest honours at the Smithfield and Royal English Shows. The herd of Shorthorns, established about twenty-seven years ago, and full of the best of Booth and Bates blood, with a judicious blending of "best Scotch," has attained great success both in the show-yard and sale-ring. At the triennial surplus-sale last year an average of £90 was realised for fifty head, including that grand young bull "Celt," which was first-prize winner, and "Reserve" for championship at last year's Royal English Show, and which was sold for a thousand guineas for exportation. The Jersey cattle are kept chiefly for the dairy, and in this they excel. The herd of Dexter-Kerry cattle was founded in 1887, by purchases made by the Prince of Wales himself at the Royal Show at Newcastle-on-Tyne. These plump little Irish emigrants have thriven admirably at Sandringham, and his Royal Highness has won numerous champion and other prizes with his Dexter-Kerries at the Smithfield and Royal Shows.

The Royal studs at Sandringham are just as famous as the cattle and sheep. The stud of Shire horses was founded with excellent material, and has been managed with such admirable judgment and such abundant enterprise that the results could not have failed to be satisfactory. Already the stud has produced several noted prize-winners, and two draft sales realised averages of £110 and £120 respectively for about forty head. The well-known prize mares "Gloaming" and "Madge" were sold at these sales. The experience obtained in the Sandringham stud proves conclusively that Shire horses can be raised in the highest perfection in that part of Norfolk.

Norfolk has long been known as the home of the Hackney horse. It was therefore a happy and becoming action on the part of the Prince of Wales to seek to encourage the breeding of this class of stock by founding a Hackney stud on his Home Farm at Wolferton. The stud was begun in 1887, and has attained a remarkable degree of success. There is an excellent demand for the stock at the biennial sales which are held, the average on the last occasion reaching 130 guineas. The present stud-horse, "Field-Marshal," was first-prize winner as a yearling at the London Hackney Show in 1891; and although he himself has not again been exhibited, his produce are worthily maintaining his reputation.

Little need be said of the Sandringham stud of Thoroughbreds. It is select and valuable, and has done great deeds. It produced that grand horse "Persimmon," which last year won the "Derby" and established a time-record which—if it should escape the fleet foot of his brother "Sandringham," entered for the race in 1899—is not likely to be broken for many a day.

His Royal Highness the Duke of York is tenant of a farm on the Sandringham Estate, and already he has attained considerable success in the breeding of Norfolk Red Polled cattle and other classes of stock. At the Smithfield and Royal Shows he has won many prizes for Norfolk Red Polls, including two Champion Cups for the best animals of the breed; while he won the Champion Plate for the best pen of pigs of any breed in the Smithfield Show with a pen of Berkshires of his own breeding. His Royal Highness takes a very active and thoroughly genuine interest in the management of his farm and live stock.

Something has been said of the comforts provided by the Prince of Wales for the labouring classes employed on his estate. Labourers who do their duty faithfully find his Royal Highness the most indulgent and thoughtful of masters, and, when too old to pursue their daily toil, their wants are amply provided for by the generosity of a kind-hearted Prince.

These notes may be closed not inappropriately by quoting the following sentences from a paper entitled "Sunday at Sandringham," in 'The Quiver' for February 1897, over the well-known signature of "Mary Spencer Warren": "Perhaps you may walk through one or two of the various villages on the estate, any one being typical of them all. The Sandringham village has about seventy cottages, all inhabited by the employees of the Prince; these cottages are in Gothic style, and consist mostly of five large, well-ventilated rooms, with an outhouse and about a quarter of an acre of land. The rent of these cottages is £3 and £4 per annum, and as wages are good, and hours of work not long, all the inhabitants are in comfortable circumstances. You will be sure to meet some of the children in their dresses of navy blue and scarlet; these are educated in the village and technical schools on the estate, in which the Prince, Princess, and daughters take great interest. The Princess is often visiting, examining the work done, and assisting by taking classes. Also you will notice a building with the inscription over its doorway, 'Working Men's Club.' This the Prince has instituted in each village as reading and recreation rooms with refreshment-bars attached. At these clubs good ale can be obtained in moderate quantities, no member being likely to get more than is good for him, and they are the only places where anything of the sort *can* be obtained, as there is *not one public-house in any of the five villages on the Prince's estate.* Should a case of sickness arise, where wines or brandy are ordered by the doctor, an order for the same can be obtained at the vicarage, each vicar having a sum of money placed in his hands by the Prince for the relief of necessitous cases. Take it altogether, there are few places where the poor are so well cared for, or in which you may with truth speak of the villages as 'model' ones, as at Sandringham."

JAMES MACDONALD.

GERM - LIFE IN RELATION TO AGRICULTURE.

By C. M. Aikman, M.A., D.Sc., F.R.S.E.

I have been asked to contribute an article on the Relation of Germ-Life to Agriculture, and I all the more readily do so since I entertain the belief that a knowledge of bacteriology is absolutely necessary to any one who desires to understand the scientific principles of agriculture. Every year the important *rôle* which the ubiquitous microbe plays in the agricultural economy is being shown to be more and more important. Thus we now know that the functions it performs in the preparation of plant-food in the soil are of the very highest significance; and that the fertility of the soil depends very largely on its minute living denizens. In the domain of the dairy, again, their rule may be said to be wellnigh omnipotent; and it is hopeless to attempt to understand the science of dairying without studying the nature and conditions of life of the bacteria of milk. Again, in combating the diseases affecting farm stock, we have in many cases to reckon with germ-life. In this connection our knowledge of bacteriology has furnished us with the means of diagnosing as well as of combating many such germ diseases with considerable success. The value of the use of anti-toxines, such as tuberculin and mallein—a practice the outcome of bacteriological research—if merely as a means of diagnosing disease, is now well known to agriculturists. In short, in all departments of farm-work, the ubiquitous germ is an important agent; and without its aid farming would be quite impossible.

To the farmer microbes are as necessary as his larger stock; without their assistance he could neither grow his crops nor make his butter and cheese. No doubt their action is not always beneficent, as, for example, in the case of disease germs, or as in the case of certain which tend to set up processes in the soil which result in the loss of that valuable plant-food nitrogen; yet when we impartially consider their action throughout the various departments of agriculture, we find that the good they perform far outweighs the evil, and that they are the best and most serviceable friends the farmer possesses.

In future, if farming is to be carried out successfully, much attention must be given to bacteria so as to ascertain the conditions under which they develop, and to utilise to the full the valuable assistance they are capable of giving to the agriculturist in his difficult and arduous occupation.

We are still only on the threshold of our knowledge of this fascinating department of science, yet already we know much regarding the nature and conditions of life of these microscopic forms of vegetable life. In the first place, we may deal with the bacteria of the soil, and the functions they perform, and then pass on to a consideration of the bacteria of milk, butter, and cheese. Before, however, dealing with those which discharge important functions in agriculture, it may be well to say a word or two of a general nature regarding them.

Nature of Germs.

Most people speak of germs as minute forms of animal life; but this conception, in the first place, is wrong. Germs do not belong to the animal but to the vegetable kingdom.

One of the first to discover their existence was the Dutch naturalist, Anthony van Leeuwenhoek, who flourished about the beginning of the seventeenth century, and who was one of the earliest possessors of a microscope. They were subsequently studied by Ehrenberg, an eminent German bacteriologist, who pointed out the important functions they performed in the process of fermentation. It was really to Pasteur, however, that the chief merit belongs of having opened up the world of minute life; and since the publication of his classical researches, nearly forty years ago, the subject has been studied by an ever-increasing host of able and patient workers all over the world.

Minuteness of Germs.

What perhaps strikes us most in studying them is their extreme minuteness. Many are not more than the one-twenty-fifth thousandth of an inch in thickness; of such twenty-five thousand could be placed side by side within the space of one inch. Millions could be packed into a space not larger than a penny-piece. Compared with the size of a man, they are as a grain of sand to Mount Blanc. Although their size differs considerably, yet all are so very minute that they require the most powerful microscopes to reveal their presence. Sometimes they are apparent to the naked eye; but that is only when they are packed together in myriads.

Form, Habit, and Colour of Germs.

As viewed under the microscope, they differ very considerably in appearance, some being of a globular shape, some rod-like, some resembling threads, and lastly, some being of a cork-screw shape. In their habits, again, they exhibit considerable difference. Some may be seen going about in pairs or in strings, while others are single. Much difference exists in their colour. The colour of most is of a whitish or dirty-whitish tinge; but not a few possess brilliant hues—red, brown, yellow, magenta, black, purple, pink, &c. Most of them possess the power of moving very quickly, some darting about in a most lively fashion. A very close inspection of them has revealed the fact that they are furnished with very delicate thread-like structures—flagella or cilia as they are called—so thin as to be quite invisible except under the very highest powers of the microscope. These latter are supposed to help in their locomotion. It is to be noted, however, that some not so furnished are able nevertheless to move about.

Reproduction.

The mode in which bacteria develop or reproduce themselves is a point of the very greatest importance. This varies very considerably among the different species; with some their development consists in the bacterium splitting itself into two, each half forming a new microbe. This method is known as *fission*. Another method, known as *budding*, consists in throwing off small buds; while a third method of development is carried out by means of spores or seeds. This last method is a very common one. In the case of certain microbes more than one method of reproduction may be used.

Conditions which favour Development.

Another point of great practical importance is the conditions under which microbes develop. The most important conditions are food, moisture, and heat. They feed directly on organic matter, although, as we shall immediately point out, some of those infesting the soil can develop in a purely mineral medium. Some live as parasites on living organisms, and of such are the disease germs; but most can only live upon dead organic matter. Most of these parasitic bacteria exercise an inimical influence. An exception, however, to this rule is furnished by the nitrogen-fixing bacteria, which reside in the nodules or excrescences on the roots of leguminous plants.

Heat is a very important condition, and is the great agent used by man for regulating their development. The heat most favourable for the large majority is that of a swelteringly hot summer's day—viz., about 90° Fahr. A temperature of about 50° higher than this is able to destroy most bacteria.

Vitality of Spores.

And here it is important to point out the very marked difference between *germs* and their *spores*. These latter are able to successfully withstand greater extremes in the way of cold or heat than the former. A few spores have actually been shown to be capable of resisting, for a short period at any rate, the boiling temperature of water. Low temperatures, on the other hand, while they check the development of microbic life, do not necessarily destroy it. It is amazing what low temperatures the spores of germs can withstand. They have been tested at the lowest possible obtainable temperatures—temperatures several hundred degrees below the freezing-point of water, and sufficiently low to freeze our atmosphere to a solid mass—and have been found to still retain their vitality.

Rapidity of Reproduction.

One of the most astounding of all the characteristics of these minute organisms is the enormous rate at which they are capable of increasing. It has been calculated that most of them are able to reproduce themselves within an hour's time. The influence that heat has may be illustrated by the statement that while they increase at ordinary temperatures in six hours' time at the rate of five hundred-fold, at the temperature of tepid water this increase may take place at the rate of four thousand-fold. It is an interesting fact to know that sunlight exercises a highly destructive action on members of the germ kingdom. Myriads of microbes are killed by the sun's rays, and while many may not be actually killed, their properties are considerably modified. This is happily the case with a large number of disease germs.

Germ-Life of the Soil.

The germ-life of the soil may first engage our attention. It is a mistake to regard the soil as dead inert matter, as was formerly done. It is far from this. We now know that the soil is literally teeming with micro-organic life. From one to two hundred millions may be present in a single ounce of soil. Most of these are engaged in carrying out minute tillage operations, which result in the decomposition of organic matter, and in the preparation, in forms suitable for assimilation by the plant's roots, of the food substances which the plant derives from the soil.

Soils may be said to be largely the product of the work of countless myriads of microscopic organisms through long ages. With regard to their nature we know comparatively little, as only certain kinds have been studied; but the farmer's obligation to them dates back to a very remote period. The fertility of the soil is directly due to their initiative action, since it has been shown that they are among the earliest agents in giving rise to the formation of that organic matter of a soil without which no soil would be capable of supporting vegetable life. It was till recently believed that for their development they required organic matter; but one of the most important discoveries which has lately been made goes to prove that a certain class, which are active in the important process known as *nitrification*, are capable of subsisting on purely mineral food. These microbes are of very wide occurrence, and can develop on bare rock surfaces. They form the first minute layer of organic matter, and prepare the way for vegetable growth of a higher kind. Hence it is being more and more recognised every day that the function of bacteria in the soil is not merely limited to the decomposition of organic matter and the preparation of nitrogen in suitable forms for the plant's uses, but also extends to the preparation of the purely mineral plant-foods. Although we know as yet but very little with regard to the methods in which the bacteria that take a part in this work of decomposition carry it on, it would seem as if the ultimate results obtained—which consist in the gasification on the one hand and mineralisation on the other of the organic matter decomposed—are only effected by an elaborate system of co-operative work. Thus to one class of microbes is due the initial stage in decomposition. Another class in their turn carry it on, and so on until the process is finished.

Decomposition and Soil Fertility.

Few of us perhaps realise the enormous importance of this process of decomposition. It is, in fact, one of the chief agencies at work in maintaining the circulation of matter—a law of nature on which the perpetuity of all life depends; for it must be remembered that the total amount of matter on the earth's surface, suitable for the formation of new animal and vegetable life, is, after all, limited. If, therefore, new life is to be built up, the constituents of dead organic matter must be broken up and rendered available for the formation of this new life. Were the law of the disintegration of matter inoperative, the earth's surface would soon become encumbered with dead organic matter to such an extent as to render life impossible.

Distribution of Soil-Germs.

With regard to the occurrence and distribution of these organisms in the soil, investigations have shown that they are almost entirely limited to the surface portion, and that the farther down we go the less numerous do they become. Their number varies according to the season of the year, being most abundant in the summer time. Indeed there is a steady increase in their number from spring till autumn. A large class oxidise the ingredients of the soil. This they do by assimilating the organic matter, and converting it into carbonic acid gas and water, or by actually giving off oxygen. Another class act in exactly an opposite way, and such organisms exercise an inimical influence. It is to the agency of organisms of this kind that the liberation and consequent loss of nitrogen from its compound forms in the soil is due. There is still a third class of organisms which enrich the soil by the addition of nitrogen from the air, which they fix and convert into forms available for the plant's uses. A brief description of these three classes of organisms may now be given.

Germ-Life and Nitrification.

All have to do with nitrogen, a substance which for many reasons may be described as the most important of all plant-foods. These are of the utmost importance to agriculture. The discovery of the nature of the process of nitrification must be regarded as one of the most important made in the domain of the science of agriculture. It has long been known that the plant absorbs most of its nitrogen in the form of nitrates; but the way in which these nitrates are formed in the soil is only a discovery of the last twenty years. To Schloesing and Müntz, two French investigators, we owe our knowledge of the interesting fact that the production of nitrates in the soil is due to bacterial life. In the year 1877, when carrying out experiments on the purification of sewage by the soil, they made this important discovery; and ever since then the process has been made the subject of investigation, much of which has been carried out by Professor Warington, F.R.S.

Although the organisms active in the process have not all been identified, we know at least of two. Nitrogen occurs in the soil in the form of organic compounds, as ammonia salts, and as nitrites and nitrates; and the process of nitrification, it would seem, takes place in three stages, in which three different classes of organisms are implicated. The first stage consists of the conversion of organic forms of nitrogen into ammonia. The ammonia-forming ferments have not been isolated in the same way as the nitrous and nitric; but we know, nevertheless, something of the conditions under which they flourish. They seem to be abundant in the air, in rain-water, and in the surface of the soil. They flourish best at temperatures between 80° and 90° Fahr., and their action is entirely checked at temperatures near the freezing-point, or at temperatures much above 110° Fahr. The exact method in which they effect their work is not known.

The second stage in the process is effected by a class of organisms which convert the ammonia compounds into nitrites. These ferments have been isolated and studied. In appearance they are of a globular form, and develop by means of spores.

The last stage is effected by the conversion of nitrites into nitrates. To the first organism—that is, the nitrous ferments—the name *nitrosomonas* has been applied, and to the nitrate ferment *nitrobacter*. Both ferments are very similar in appearance; but the nitrous ferment is, on an average, about four times as large as the nitrate ferment. A very striking fact with regard to both these kinds of bacteria is that they differ from all hitherto discovered bacteria. Indeed, in order to isolate them, they had to be cultivated in a special medium, composed entirely of mineral ingredients. This fact is one of very great interest and importance in vegetable physiology, since it is subversive of what has hitherto been regarded as a fundamental law—viz., that the power of deriving carbon from a mineral source is alone possessed by green-leaved plants.

Conditions influencing Nitrification.

Of the highest importance from a practical point of view are the conditions determining the rate at which this process of nitrification goes on. In a general way these conditions have been known for many years, and a favourite method of obtaining saltpetre for the manufacture of gunpowder consisted in the artificial production of these conditions. Thus large heaps of mould, rich in nitrogen, mixed with decomposing animal matter and ashes, road-scrapings and lime, and variously known as "nitre-beds," "nitraries," and "saltpetre plantations," were formerly erected in many parts of the world for the rapid development of the process of nitrification. But it is only lately that we have obtained any precise knowledge of the exact nature of the process. In the first place, it must not be imagined that the three stages in the process take place separately, and that the first stage has to be completed before the second stage is possible. On the contrary, it would seem as if all three stages go on at the same time.

We have pointed out that the organisms in the soil are chiefly limited to the superficial layers. Professor Warington has found in his experiments that they are not to be met with below 6 feet, and that they are certainly not active much below 18 inches. The reason why they only occur in the surface-soil is due to the fact that the conditions favourable for their development are alone to be found there. Thus, for one thing, they require a supply of air. For this reason they are not found in waterlogged soils. On the other hand, they require a certain amount of moisture. From a third to a half of the total moisture the soil is capable of holding is supposed to be the most favourable amount for their development. From what has been stated it will be seen how tillage operations and proper drainage will influence their development.

But one of the most important conditions of all is temperature. The most favourable temperature for their development is rarely experienced in this country. Occasionally, perhaps, on a swelteringly hot summer's day it is reached. When the temperature reaches some 8° or 10° above freezing-point the process is extremely feeble.

Of course a very important condition is the presence of the necessary food-constituents. Thus the presence of phosphoric acid is most important, as also is lime; and this consideration no doubt explains to a certain extent the benefit derived from the application of lime to soils in many cases.

In order to permit of the free development of the nitrifying organisms, it is necessary that the nitrous or nitric acids to which they give rise be neutralised by some base as they are formed, since an acid environment is fatal to these organisms—indeed, for their free growth a slight alkalinity in the medium in which they are developing is necessary. And this explains to a certain extent the infertility of sour soils. In such soils an accumulation of vegetable acids occurs which effectually prevents nitrification. On the other hand, too great alkalinity is equally unfavourable. It is on this account that strong urine solutions are not suited for the process of nitrification. Under such conditions there is generated in the putrefying urine too much carbonate of ammonia. For a similar reason the addition of burnt lime to a soil may check it by producing a condition of excessive alkalinity. And in this connection the value of gypsum may be referred to, since it is an admirable agent for reducing too much acidity.

Among the unfavourable conditions which may exist in soils may be mentioned the presence of poisonous compounds. Of these the most likely to occur are certain iron compounds. Thus ferrous sulphate, which is apt to be present in badly drained soils, exercises a fatal effect. Deleterious also in their influence are certain sulphur compounds, more especially sulphides. This explains the reason of the injurious action of fresh gas-lime, which contains such sulphur compounds. Common salt, it may also be pointed out, is inimical to the process. Another important condition of this process is the absence of sunlight, as the bacteria only develop freely in the dark—offering in this respect a marked contrast to the higher plants, for the normal growth of which sunlight is necessary.[1]

Inoculating Soil with Germs.

Since, then, the fertility of a soil may be said to depend to no small extent on the abundance of these nitrifying organisms, and since it often occurs that on account of unfavourable circumstances a soil may become almost completely sterilised—*i.e.*, have its microbic life killed—the highly practical question arises, Is it feasible to seed a soil with these valuable organisms? An affirmative answer to this question may be given, since numerous experiments have demonstrated that considerable benefit may be derived from inoculating a sterile field by strewing some soil rich in nitrifying bacteria—such as an old garden soil—over it. The great value of farmyard manure as a manure when applied to the field, it has been suggested, may be due to the fact that, in addition to its well-known chemical and mechanical properties, it furnishes the soil with an abundant supply of nitrifying organisms. Indeed this aspect of fertilisers merits much and careful attention in the future. The most valuable fertiliser, after all, will probably be seen to be that which, besides containing the necessary plant-food, provides in the shape of nitrifying bacteria the agents whereby this plant-food is made available. Thus a manure which, in the case of its decomposition, favours the development, in large numbers, of nitrifying bacteria, confers a benefit on the soil which is not limited to the direct action of its manurial ingredients. But the principle of inoculating the soil with microbic cultures has been worked out more extensively, as we shall see immediately, in the case of the nitrogen-fixing bacteria.

Development of Nitrifying Organisms.

The rate at which the nitrifying organisms develop is a highly important practical point. This depends, as has been pointed out, on how far the above-enumerated conditions are present. But it may reasonably be asked, What are the actual chances in this climate of abundant nitrification in the soil? Now the absence of one important condition must necessarily always militate against a maximum development of nitrifying organisms in our fields. This is the presence of the most favourable temperature. As I have remarked elsewhere in discussing this question, "In this country, where the most favourable temperature for its development is seldom reached, it never goes on at the same rate as in tropical climates."[1] Of course it is only during the summer months that it is active; although, on the other hand, it is only during a short period, during the winter months, that the cold is so intense as to check it altogether. It has been found that on fields lying fallow it goes on more abundantly than on fields covered with vegetation.

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[1] This statement perhaps requires qualification. The higher plants can grow under the influence of the electric or magnesium light; but under such circumstances their growth is of a more or less sickly nature.

Rate of Nitrification.

Before leaving this point it may be interesting to point out at what rate nitrification may take place in the soil. This is a difficult matter to calculate, for various reasons. Laboratory experiments have shown that where all the conditions are of the most favourable nature, it is possible to go on per day at a rate which, when calculated, would equal 6 cwt. of commercial nitrate of soda per acre. That it ever goes on at this rate in a soil is not to be supposed for a single moment. Still the calculation is interesting as throwing light on the problem of the formation of such colossal deposits of nitrates as the nitrate-fields of Chile. In these deposits, which have supplied, and continue to supply, the world with enormous quantities of one of the most valuable of fertilisers, nitrate of soda, an example is afforded of the economic importance of the process. Few farmers, we suspect, recognise when applying this fertiliser that they owe it to the action of their microbic co-workers. The present enormous use of this fertiliser suggests the reflection of how wonderfully the circulation of matter is carried on. These deposits are supposed to be due, largely, at any rate, to the decomposition of marine vegetation. But this marine vegetation, we must remember, obtained its nitrogen in its turn from the nitrate dissolved in the sea-water; and these found their way in the drainage from the fields where they were produced by the process of nitrification.

The second class of soil organisms do not oxidise the soil products, but reduce them. Among the most important of this class are those which effect denitrification, as it has been called. They undo the work of the nitrifying bacteria, often with the result that a portion of the nitrogen is set free, and, escaping in the gaseous form, is entirely lost to the soil. The conditions which favour the development of the denitrifying bacteria are the opposite of those which favour the development of the nitrifying. Hence it is sufficient to aim at developing the latter.

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[1] Aikman's Manures and Manuring. William Blackwood & Sons.

Disease-producing Germs in Soils.

And while speaking of bacteria of the soil of an undesirable nature, reference may be made to the fact that the soil may contain disease-producing germs. Thus it is commonly believed that those producing that deadly disease, tetanus, or lock-jaw, are often present in the soil. By the burial of animals which have died of germ-produced diseases, the further propagation of that disease has been known to result. Thus in one case sheep pasturing in a field where two years previously a single animal suffering from splenic fever had been buried, were infected with the same disease and died. Yellow fever, it may be added, is another disease the germ of which seems to be able to live in the soil. These facts furnish strong evidence in favour of cremation as a mode of disposing of the dead. They also serve to show how many considerations there are against the indiscriminate use of sewage from our large towns and cities.

Fixing Free Nitrogen.

We now come to deal with the third class of soil-ferments—viz., those which enrich the soil by fixing the free nitrogen of the air. The discovery of these organisms in certain excrescences or nodules on the roots of leguminous plants is one of the highest importance. The process furnishes a most striking and instructive example of co-operation in the plant-world. It has done much to throw light on what has long been regarded as one of the most difficult problems connected with the growth of certain kinds of crops. This is the extraordinary capacity of such crops—when compared with other crops—to obtain nitrogen. More especially has this been observed in the case of one common agricultural crop—clover. It was believed till recently, however, that the power of this plant in this connection might be explained by the extent and ramification of its roots, which, as is well known, bring them into contact with a wide area of soil, and thus furnish the plant with special facilities for collecting nitrogen in out-of-the-way corners of the ground not utilised by other crops. But such an explanation, while it may partially serve to explain the case of clover, can hardly be regarded as applicable to other leguminous crops such as beans and peas—crops which, along with clover, are also endowed with an extraordinary capacity for collecting their nitrogenous food. The mystery has at length been cleared up by a discovery which bids fair to revolutionise modern husbandry. It will serve to render the description of the discovery more intelligible to our readers if, in the first place, we briefly revert to the history of the question.

The discovery of what has been called for short the "nitrogen question" is a highly interesting one, and extends back many years. Even at so remote a period as the time of the Romans the resuscitating effect which certain kinds of crops such as peas, beans, clover, &c.—the class known as leguminous crops —exercised on impoverished soils had been observed. The adoption of the practice of the rotation of crops, a very old custom, may be said to be a recognition of the same principle; but the attempts to provide any scientific explanation of this empirically recognised fact have only been made within recent years.

The discussion of the source of the plant's nitrogen dates from about the beginning of the present century. At that time opinion was divided. According to some, the plants could derive their nitrogen from the air; while by others this statement was controverted. For many years the controversy was continued, now the former and anon the latter view gaining the ascendancy; but gradually the belief that plants were unable to utilise the atmospheric nitrogen became the popular one. This view was further strengthened by certain elaborate experiments, carried out by eminent French and English agricultural chemists, and for a number of years the matter was regarded as settled. Up till this period no suggestion was made that considerable difference might exist in this respect between different kinds of the higher plants. The view finally adopted, and held till within a few years ago, on the question, was to the effect that, so far as the higher plants are concerned, nitric acid is practically the only available source of their nitrogen. It was recognised, however, as the result of numerous experiments on the subject, that under certain conditions ammonia and certain compound forms of nitrogen other than ammonia may be absorbed by plants. Of course it has been for some time recognised that so-called parasites obtain their nitrogen, just like animals, from organic nitrogenous matter; and that in insectivorous plants we have examples of plants actually feeding upon animal matter.

Meanwhile, however, another line of investigation was being followed up, which was destined ultimately to furnish the key to the mystery. The existence of nodules or fleshy excrescences on the roots of leguminous plants, such as peas, beans, and clover, has been known for a very long time—certainly for at least two centuries—but it was only in 1886 that it was discovered that the tissues of these nodules were filled with bacteria-like organisms. No connection of these organisms with the absorption of nitrogen by the plant was for a number of years suggested; and it was only some ten years ago that we realised that these furnished the key to the highly important and much-discussed nitrogen problem. It is now definitely known that leguminous plants can utilise the free nitrogen of the air, and that this fact explains the resuscitating effect exercised on the soil by the growth of such crops.

The details of the process of "nitrogen-fixation," as it is called, are not as yet known with any accuracy. The organism or organisms—since it would seem that there are quite a number of different kinds implicated in the process, and that each of the different leguminous plants possesses its own special kind—invade the roots from the soil, and give rise to the formation of the nodules. There they multiply with great rapidity, and stimulate the growth of the plant-cell. So far as is at present known, there are three stages in the process. The first is that during which the bacteria live as parasites at the expense of the plant-cell. Gradually, however, the struggle for existence getting very intense, the bacteria become passive and the cells are filled with bacterioids, or bacterium-like bodies. It is when this period is reached that the plant absorbs the contents of the nodules, leaving the cells, out of which they are formed, in a limp condition (Marshall Ward). It is thus by the agency of microscopic organisms that this highly interesting process is effected—a fact which, we may point out in passing, serves to explain the negative results arrived at in the elaborate experiments carried out many years ago. These experiments were made under conditions which excluded the agency of bacterial life, and where this agency is excluded it still remains true that no fixation of nitrogen takes place.

As we have already indicated, much still remains obscure with regard to this interesting process. How exactly the nitrogen is fixed we do not know beyond the fact that the nodules are necessary for the process—since the more abundant the nodules, the more abundant the quantity of nitrogen fixed. It would seem that the soil is by no means an unimportant factor, since from it must come the fixing bacteria; and experiments have shown that in this respect soils differ very considerably, some being more abundantly provided with nitrogen-fixing bacteria than others.

In addition to leguminous plants, it may be mentioned that *algæ* are able, with the assistance of bacteria, to effect the fixation of nitrogen from the air. In both cases, however, the process is effected by the joint agency of the plant and the micro-organism, and thus furnishes us with an example of what is scientifically known as *symbiosis*, and which we may popularly translate into the term co-operation.

Nitragin.

The discovery of the nitrogen-fixing bacteria was not long in being put to a practical use. Pot experiments were very soon started, in which soil-extracts were used and experimented with. The result of these experiments showed that all soils are not equally suitable for growing leguminous crops; that many, indeed, are poorly supplied with nitrogen-fixing bacteria; but that such soils, when inoculated with a soil-extract from a portion of the soil taken from other fields rich in such bacteria, yield a luxuriant growth. These experiments have led Professor Nobbe, a well-known plant-physiologist, to prepare pure cultures of the nitrogen-fixing bacteria for general use. This very practical application of bacteriology to agriculture was patented in February of this year. As, however, *Nitragin*, as this preparation of such pure cultures has been named, forms the subject of another paper in this volume, further reference to the question is here unnecessary.

The important functions discharged by micro-organic life in connection with the growth of the higher plants will be thus seen to be not less truly interesting than the *rôle* performed by the disease-producing germs in connection with the propagation of disease. The interest of the question is probably increased by the reflection that in their case the results of their lifework is purely of a beneficent character—a reflection which is denied to us in the study of the pathogenic or disease-producing germs.

Germ-Life in relation to Dairying.

We next come to discuss the functions of germ-life in the department of the dairy; and important as we have seen their functions to be in connection with the soil, they are, if possible, still more important in the dairy. Here their rule is, as has been already said, wellnigh omnipotent; and it is imperative that any one who desires to understand the various processes of the dairy should understand the functions performed by bacteria. We have referred to their abundance in the soil; but their abundance in milk is very much greater. We know of no medium which, in every respect, is more admirably suited for acting as a feeding-ground for germ-life than milk. The fact that milk is the most perfect of our foods is the very reason why it is one of the best media for the development of germ-life.

Some conception of their abundance in milk may be furnished by mentioning that a single drop of it may often contain millions of microbes. Nothing is more striking than the rate at which these microbes develop under favourable conditions. Indeed this is abundantly evidenced by the statement that milk, as it is drawn from the udder, is free from germ-life, and that it is only during the process of milking that it becomes contaminated. In certain cases, no doubt, where the udder is in a diseased state, the milk contains germ-life before it leaves the udder. When kept at an ordinary temperature milk may have its germ-life increased, within a period of six-hours' time, *five hundred-fold;* whereas if kept at a temperature more favourable for the development of germ-life, this multiplication may take place to the extent of *four thousand-fold.* In one sample of milk which had been kept for twenty-four hours at 77° Fahr. the gigantic number of 557,500,000 were found to be present in a cubic centimetre (about the 1-28th of an ounce).

Influence of Germ-Life on Milk.

Now, to this germ-life it has been abundantly proved all changes which milk is liable to, on keeping, are due. If we can succeed in keeping milk free from germ-life we can keep it perfectly fresh for an indefinitely long period of time. Sterilised milk has been kept perfectly fresh for years. The abundance, however, of germ-life in the air and on the surface of different objects, such as on the teats of the cow and on the hands of the milker, in all parts of the byre, render contamination impossible to avoid. Now, among the different forms of germ-life which find their way into milk, the action of a very large number is no doubt of a perfectly harmless nature. The rest may be divided into two classes—the useful and the injurious. Sometimes those which, under certain circumstances, are useful, may under others be regarded as undesirable. Many bacteria are extremely important in butter-making and cheese-making. It would require much more space than we have at our disposal to describe in any detail the different kinds of bacteria that have been found in milk. All that we can do here is to refer to some of the more important.[1]

Germs the cause of Souring of Milk.

Among the germs frequenting milk undoubtedly the most interesting are those which are concerned in what is called *lactic fermentation.* These microbes are the prime agents in effecting the changes which milk undergoes on being kept. It is to them that the souring process is due. The belief formerly entertained, and still evidently prevalent in the popular mind, is that this process, which results in the production of lactic acid from the milk-sugar, is due to one definite kind of organism which has been called the lactic ferment. It has been known now for a number of years that of lactic ferments there is a large class. Many ferments, again, produce lactic acid incidentally, as it were, and not as their chief product. For instance, a number of the bacteria which produce strange colours in milk give rise to lactic acid as one of their products. A very curious example of the adaptability of bacteria, and of the fact that they are influenced by their surroundings, is met with in the case of this class of organism. Thus, for example, where they are cultivated in substances free from sugar they no longer produce lactic acid. Among the lactic-forming bacteria, however, some are much better suited than others for the production of lactic acid. The usefulness of such bacteria comes in in the manufacture of butter. To their action the ripening or souring of cream before it is churned is due; and it is highly important to have the proper lactic ferment active under such conditions.

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[1] The subject of dairy bacteria will be found treated at considerable length in several recently published books on Dairy Science. Among these may be mentioned Trendenreich's 'Bacteria in their Relation to the Dairy' (translated by Davis, and published by Methuen); Fleischmann's 'Book of the Dairy' (translated by Aikman and Wright, and published by Blackie); and Aikman's 'Milk: its Nature and Composition' (A. & C. Black). In the last-named work a short bibliography of recent dairy literature will be found.

Pure Cultures in Butter-making.

Attempts have been made to isolate and cultivate in pure cultures such lactic-forming bacteria as have been found to impart to butter the pleasant aroma and flavour which good butter possesses; and, as we have already mentioned, pure cultures of lactic bacteria are now sold on a commercial scale for use in dairies. It has been claimed that such cultures when used have done much to improve the quality of butter, and to prevent the development of oily, fishy flavours in the butter—flavours which are characteristic of badly-prepared butter.

But lactic fermentation, while perhaps the most important, and certainly the most common, is not by any means the only type of fermentation that milk is liable to. It can only go on for a certain time, since the acid generated proves fatal when it reaches a certain percentage—viz., over one per cent—to the ferments causing it. Another common type of fermentation is *butyric.* Where this takes place milk has imparted to it a bitter flavour. The bacteria causing this fermentation are also numerous. Again, we have bacteria which in their action affect the casein of milk. They give rise to a *rennet-like* product, which coagulates the milk. Such bacteria are important in the ripening process of cheese.

Alcoholic Fermentation of Milk.

Another very interesting type of ferments are those producing *alcohol.* This type of ferment, however, is not nearly so common as the other. It has been used for the preparation of two types of beverage made from milk—viz., *kephir* and *koumiss.* The first of these beverages, *kephir*, has long been used in the Caucasus. It is made from cow's milk by the addition of a ferment, the exact nature of which is not known, called "*kephir-grains.*" In this way *alcoholic fermentation* is induced, and after being allowed to proceed for some time the beverage is ready for use. These *kephir*-grains seem to be made up of a number of different ferments, and have been used from time immemorial. *Koumiss* is used in Russia, and is made from mare's milk.

Colour Bacteria of Milk.

A large number of different kinds of bacteria are invariably found to be present in milk: there are some, however, which only occasionally occur. Among these may be specially mentioned a class which give rise to curious coloured patches—blue, yellow, red, green, pink, &c. The blue-milk bacillus was one of the earliest kinds of fermentation in milk to be studied, being investigated as far back as the year 1841. It has been traced to be chiefly due to the presence of the *bacillus cyanogenus,* working in conjunction with a lactic bacterium, and furnishes another example of co-operation. Redness in milk is sometimes caused by a very famous bacillus, the *bacillus prodigiosus*—an organism which sometimes attacks bread, and which develops with such marvellous rapidity that its occurrence on the holy wafer has given rise to the well-known legend of the "bleeding host." Again, the organisms giving rise to yellow, as well as to green and violet colours, have been identified. To microbic life has been traced the "viscous," "stringy," or "ropy" condition which milk sometimes exhibits, as well as its predisposition to curdle and the generation in it of bitter flavours.

Disease-Germs in Milk.

Now, in addition to all these bacteria mentioned, occasionally we have the presence in milk of *disease-germs.* It is a notorious fact that milk has too often in the past been the means of spreading various diseases owing to the fact that it has contained the germs of such disease, which have come into it in a variety of ways. Typhoid epidemics have thus again and again been traced to a contaminated milk-supply; while scarlet fever, cholera, and diphtheria have been similarly propagated. But there is every reason to suspect that of all diseases propagated by milk, that dread scourge, consumption, is the most common. The subject is one which, during the last few years, has engaged the attention of sanitary authorities in all parts of the country, and has been dealt with by a Royal Commission. The prevalence of tuberculosis among cows is so widespread that it is to be suspected that no inconsiderable amount of the milk in common use contains the tubercular bacillus. Another type of bacteria, giving rise to gastric and intestinal disturbances, more especially in infants, is also to be found in milk.

Controlling Milk-Germs.

Such, then, are some of the two hundred odd dairy bacteria which have been as yet investigated. Before leaving the subject it may be well to say a word with regard to the means at our disposal for regulating or for destroying these minute denizens of milk. In the first place, it should be impressed on every dairyman that the observance of scrupulous cleanliness—cleanliness on the hands, on the teats of the cow, in the milk utensils, and in the byre—is one of the most important means of guarding against the introduction of injurious organisms. Some conception of the significance of the introduction of a little dust may be inferred from the statement that an Italian investigator discovered in one gramme ($\frac{1}{28}$ of an ounce) of dust from the road at Turin no less than seventy-eight millions of bacteria.

Influence of Temperature.

Of all the agents at the command of man the most potent in this connection is heat. We have already pointed out at the beginning of this paper the influence of different temperatures on different forms of germ-life. Now, a large number of the germs frequenting milk are very easily killed. This is the case with such as do not develop by means of spores, for the spores of germs, as we have seen, are much more difficult to destroy than the adult germs. Thus the lactic-forming bacteria, since they do not develop by means of spores, are killed at as low a temperature as about 158° Fahr. It is for this reason that even the heating of milk to a comparatively low temperature is sufficient to exert a very marked influence on its keeping properties.

With regard also to most of the disease-producing germs, although spore-forming, they are killed at fairly moderate temperatures. There is an exception, however, to be found in the case of the consumption germ, which is extremely resistant. In butter they have been found to live for at least 120 days, and in cheese even after the lapse of 35 days. The finding of the Royal Commission on this subject is that unless milk be raised to the boiling temperature it cannot be regarded as free from the risk of tubercular disease.

The most resistant type of micro-organic life which is liable to find its way into milk is the hay bacillus. The spores of this bacillus are very abundant in the dust of the byre. So hardy are these spores that they can resist even boiling temperature. This statement will emphasise the importance of the cleanly handling of milk, since it is due to dirt that the most resistant types find entrance. The more contaminated with germ-life milk is, the more difficult is it to sterilise.

Germs in Butter and Cheese.

In butter and cheese bacteria are scarcely less numerous than in milk. It has already been pointed out that the aroma and flavour of butter are due to the action of microbes; and although the subject is not very clear, the great value of using pure lactic cultures, the souring or "ripening" of cream for the manufacture of butter, seems to have been practically demonstrated.

Of especial value are such cultures for correcting disagreeable flavours, such as are liable to occur in inferiorly made butter,—an oily, fishy, or rancid taste. With regard to the number present in that widely used article of food, it may be interesting to add that Lafar, as the result of numerous experiments carried out on Munich butter, is of the opinion that a gramme of that article may contain from ten to twenty millions.

But much more important is the action of bacteria in cheese, since its flavour is entirely due to their action. Nearly two millions of bacteria have been found by one observer to be present in a gramme of fresh cheese; while in the same amount of older cheese nearly five times that number have been found to exist. Here, again, our knowledge is still in its initial stages. It would seem highly probable, however, that each kind of cheese has its own particular microbe. The inflated or puffy condition of certain cheeses is also the result of the action of bacteria. The little cavities characteristic of some cheeses are supposed to be due to the action of a certain kind of bacillus known as the *bacillus diatrypeticus casei.*

Germ-life in relation to Live Stock.

In conclusion, reference may be made to the function of germ-life in connection with diseases affecting farm stock. In this connection it is rather interesting to note that it was one of the diseases most common among cattle, known variously as splenic fever, anthrax, or charbon, that was the earliest discovered germ disease, having been investigated as early as the middle of the present century. It was also this disease that in the year 1881 was made the subject of one of the most striking practical experiments ever carried out in this department of investigation by the illustrious Pasteur. The experiment was designed to test the value of his enormously important discovery of the effect of attenuated virus as imparting immunity to the animal body, when inoculated with such virus. In order to explain this statement, we may mention that when disease-producing bacteria are cultivated outside the animal body in artificial media, and under certain conditions, they become "attenuated" —*i.e.*, their virus becomes weakened. Pasteur had found about the year 1881 that such attenuated cultures of disease germs, when inoculated into animals, were able to impart to these animals immunity from the disease these germs caused; and in order to test the practical value of this discovery, the Society of Agriculture in Melun, in France, placed at his disposal sixty sheep and ten cows. The result of this famous experiment is doubtless well known to many of our readers. It verified in a marvellously striking manner the accuracy of Pasteur's theory. The best known and most widely prevalent of germ diseases amongst farm stock are tuberculosis, glanders, and foot-and-mouth disease. The subject, however, is one which does not admit of further treatment here.

From this necessarily imperfect sketch of the different functions performed by germ-life in connection with agriculture, it will appear to every reader how enormously important these infinitely minute workers are on the farm, and that no farmer can afford in future to disregard them.

THE SANITATION OF FARM BUILDINGS.

By Professor John Scott.

In this climate house shelter of some kind is an absolute necessity for horses, cattle, and pigs, at least during the greater part of the year; but shelter in the form of insanitary farm buildings is by no means an unmixed good, and a large amount of the disease and mortality amongst farm stock is due to causes which arise solely out of the very shelters which are supposed to increase the health and comfort of the animals.

No animals can show good results when kept in overcrowded, badly-ventilated, and insufficiently-drained premises. Overcrowding, both amongst men and animals, is now recognised as directly raising the mortality by pollution of the air, water, and soil. And living continuously in a vitiated atmosphere very strongly predisposes to diseases of various kinds, and assists in the more rapid spread of communicable diseases.

Experience shows that wherever proper sanitary measures have been adopted, these diseases have gradually diminished, not only among men but also among animals. Sir Henry Littlejohn points out with regard to phthisis in man, that by means of drainage of the soil producing a drier atmosphere, and by improvement of dwellings generally, this disease has been greatly lessened in amount over considerable districts of the country. Improvements in drainage have also brought about a diminution in the death-rate from tuberculosis amongst cattle: indeed many medical and veterinary experts have expressed the opinion that were cowhouses and cattle-sheds properly looked after as to structure, ventilation, drainage, and water-supply, this bovine scourge might ultimately be almost eradicated.

Sanitary Legislation.

The Legislature, by various Acts of Parliament, has placed ample powers in the hands of local authorities for so regulating the sanitary state of farm buildings, where the sale of milk is concerned, as in course of time to abolish the conditions known to favour the origin and spread of tuberculosis and various other diseases.

The "Dairies, Cowsheds, and Milk-shops Order, 1885," not only requires the registration of dairymen and others who keep cows for the sale of milk, but also requires them to satisfy the local authority as to the lighting, and the ventilation, including air-space, and the cleansing, drainage, and water-supply of the premises to be so occupied, which must be such as are necessary and proper (*a*) for the health and good condition of the cattle therein; and (*b*) for the cleanliness of the milk-vessels used therein for containing milk for sale; and (*c*) for the protection of the milk therein against infection and contamination.

Sanitary legislation of a more general kind as affecting farm buildings is provided to some extent by the "Public Health (Scotland) Act, 1867." Under section 16 of that Act, any stable, byre, pigstye, or other building, in which any animal or animals are kept in such a manner as to be injurious to health, is an offence. So also is any insufficiency of size; defect of construction or ventilation; want of repair or proper drainage; foul water-courses, ditches, gutters, or drains, alongside of any public road; the want of a cesspool, or a foul cesspool; any well or other water-supply so tainted with impurities, or otherwise unwholesome, as to be injurious to health, or calculated to promote or aggravate epidemic disease; or any accumulation of manure within 50 yards of any dwelling-house, within the limits of a burgh, or wherever situated if injurious to health.

Considerable stir was raised in farming circles by the Public Health Bill of 1896, which, as introduced into Parliament, made it an offence for a farmer to lay down farmyard manure within 60 yards of a public highway. It was said that if the bill passed as introduced it would be necessary to remove three-fourths of the farm-steadings in Scotland from their present sites; and in the House of Lords a provision was made that farmyard manure should be excluded, and that the objectionable clause should only apply to police manure. The fact remains, however, that in a prosecution under the Act of 1867 it is not necessary to prove that any accumulation of manure, farmyard or otherwise, within 50 yards of any dwelling-house, within the limits of a burgh, is injurious to health: outside a burgh this injury to health requires to be proved.

Requirements for Health.

The conditions necessary for the maintenance of the health of animals in buildings have been more or less determined, by observations and experiment, and any infringement of these conditions will be found to lead to the deterioration of health and to the ultimate invasion by disease. These conditions will be briefly discussed as they arise under the various heads of Ventilation, Lighting, Drainage, Water-Supply, &c.; but first of all it is necessary to say a few words about the site and foundations of the buildings.

Site and Foundations.

Ground-Air and Ground-Water.—Emanations from ground air and water are the chief dangers to health from a bad site, so far as the building itself is concerned. All soils are more or less porous and filled with air; and as the air within a building is always drier and warmer than the air below, there is great danger of unhealthy emanations rising into the building. Then, in most soils, there is also a bed of underground water, or saturated subsoil, varying in its depth below the surface of the ground according to the season of the year. This ground-water is a serious danger to health when it becomes stagnant, and scarcely less so when its level is fluctuating, if it come within a few feet of the surface, as the upper layers of the soil are then maintained in alternate conditions of dryness and moisture; and if the soil happens to be saturated with liquid manure or sewage, as is too often the case, all the factors will be present for the discharge of polluted ground-air into the building.

Subsoil Drainage.—The first step in the sanitation of farm buildings, then, is to have the site and foundations thoroughly underdrained by ordinary land-drainage pipes, to a depth of not less than 5 feet. In the case of old buildings which are not so underdrained already, the drain-pipes should be laid all around the foundations. In clay soils this precaution is absolutely necessary, but it may be done with advantage in almost every case. The soil will then be dry and properly ventilated, the ground-air will be purer, and the health of the live stock within the building will be greatly improved.

Floors.—Subsoil drainage, however, will not prevent ground-air from rising into the building; and as the site of farm buildings is always liable to fresh contamination, it is best to guard against this possibility by having all the floors laid with concrete or other non-porous material.

It is as necessary for the floor of a live-stock building to be air-tight and water-tight to keep the foundations from contamination, as to keep out emanations from below. One of the chief causes of the insanitary state of farm-stables, cow-houses, and piggeries is that the floors as a rule are too rough to be kept clean. Any cobble-stones or bricks set in plain sand are considered good enough for the purpose. In consequence there might as well be no pavement at all, its interstices retaining as much filth as could be absorbed by a plain earthen floor. Wooden floors are not much better, as they absorb urine and cannot be made jointless.

A sanitary floor is one which presents a smooth surface, into which water will not soak, that can be easily cleaned by sweeping, and that will dry quickly if washed; so impervious that neither water nor dirt can go down through it, nor any vapours or emanations rise up through it.

Such a floor is furnished by a composition of concrete and asphalt, or by good Portland cement mixed with coarse sand, crushed bricks, or stone-chips which will pass through a ¼-inch mesh, laid upon a basis of broken stones or small brickbats, the whole thickness of the flooring being 3 or 4 inches. Floors of this description are smooth without being slippery, and very durable even for heavy cart-horse stables.

Damp-proof Course.—It is a safe precaution to prevent the ascent of dampness in the walls by inserting a damp-proof course of cement both in outside and inside walls, when they are about 6 inches above the ground-level. This damp-proof course should be carried down the inside of the wall to join the concrete flooring without a break, so as to form a solid skirting (fig. 6).

With these precautions—subsoil drainage, concrete flooring, and a damp-proof course in the walls—we shall have done our best to make the building healthy from below.

Ventilation.

Ventilation is the proper renewal of air in confined spaces. With men or animals shut up in buildings this soon becomes a matter of life or death. Respiration deprives the air of oxygen, and charges it with carbonic acid, watery vapour, ammonia, and organic matter. Every one of these exhalations is prejudicial to the health of animals in buildings, if the ventilation is not sufficient to renew the air frequently enough. A horse, for example, gives off about 6 cubic feet of carbonic acid per hour; and the same animal exhales by lungs and skin about a gallon of water daily. In evidence of this, enter almost any farm-stable at eight o'clock on a winter evening, and the chances are that the coats of the horses are quite wet, and moisture running off the walls. The organic matter, however, is by far the most dangerous exhalation, and as it has a great affinity for water, it is readily absorbed by damp walls; whereas, in a well-ventilated stable or cow-house, it is completely oxidised and passed on into the open air. In most stables there is a strong smell of ammonia, particularly at night after shutting up, but constant, though faint perhaps in the day-time; and this is a sure sign not only that the ventilation is deficient, but also that the drainage and conservancy arrangements are bad.

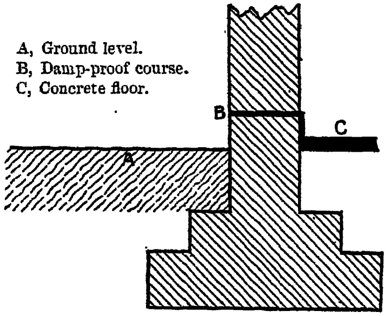

Fig. 6.—*Section of wall showing damp-proof course.*

The majority of farm buildings for live stock are not only deficient in ventilation, but some of them are planned on principles which do not admit of it. It is impossible to have a healthy or well-ventilated stable where there is a hay-loft over it, as there too often is on the farm. The loft encroaches upon the cubic space; it does not admit of proper ventilation, still less of proper lighting; and the heated air in the loft makes the hay musty, and affects the horses in various ways, besides being the chief cause of broken wind. As a preliminary, therefore, to good sanitary arrangements in a stable, the hay-loft must be cleared away, and the building thrown open from the floor to the roof. Again, in cowhouses a very common arrangement of the stalls is in double rows, with the heads of the cattle facing each other, and only a feeding-passage between them. This is now proved to be one of the very worst arrangements for ventilation, as the cows standing so close face to face inhale each other's breath, and any fresh air admitted can only come from behind, and has to pass over the urine-gutter and the excreta before it reaches the cows. For these reasons a single row of stalls is better than a double one, even when the cubic and floor space for each animal is the same in both cases. Moreover, all buildings which cannot be given a complete draught through them are more or less unhealthy. The human mortality in any district of every large town is invariably greatest in proportion to the number of back-to-back houses. It is the same for live stock. No doubt back-to-back buildings can be put up at rather less cost, but it is bad economy where animal health is concerned.

Amount of Fresh Air required.—The point at which the organic matter of expired air begins to be perceptible to the senses is the standard of purity below which the air of a building is held to be prejudicial to health. This standard limit is, for convenience' sake, estimated by carbonic acid corresponding to 0·6 volumes per thousand. Fresh air contains 0·4 volumes per thousand; the permissible vitiation, therefore, is 0·2 volumes of carbonic acid in 1000 volumes of air. An average man gives off 0·6 cubic feet of carbonic acid per hour; so that in his case it requires $\frac{0{\cdot}6}{0{\cdot}2} \times 1000$ or 3000 cubic feet of fresh air to maintain the standard. Animals not only foul the air by respiration and exhalation, but their intestinal gases and excreta add to the general contamination. Allowing for this in addition, and calculating the carbonic acid either by lung-surface or by the amount of carbon in an average diet, it will be found that a horse probably fouls 30,000 cubic feet, a cow 20,000 cubic feet, a pig 6000 cubic feet, and a sheep 4000 cubic feet of air per hour. These, then, are the amounts of fresh air required in each case to maintain the standard.

Cubic and Floor Space.—This depends, to some extent, on the number and size of the ventilators. It is always better to have a large than a small cubic space, because if anything interferes with the ventilation the ratio of impurity for respiration and exhalation increases much faster in a small than in a large space. But it must not be supposed that increased cubic space in a stable or cowhouse does away with the necessity for introducing fresh air, or for changing the air in the space; as after a very short time the same amount of fresh air must be supplied every hour, no matter whether the cubic space is large or small.

At present far too little attention is given to the amount of cubic space allowed in stables and cowhouses. Many farm-stables have not more than 500 cubic feet per horse, when a pure atmosphere in the stable demands something like 1400. In many byres, again, the air-space does not exceed 300 cubic feet. This is bad enough on farms, where the cows get open-air exercise at times, but it is much worse in town cowhouses, where the animals never see the outside of the door until they go to the butcher. In Edinburgh, where there are within the city boundaries over eighty byres containing some 2240 cows, no byre is now licensed where the air-space is less than 500 cubic feet, and it must be brought up within a short time to 800 cubic feet. Even that will leave much to be desired in this respect. To admit of the maintenance of the contained air in a reasonable state of purity, the cubic space should not be less than 1000 feet for each cow. A pig requires about 360 and a sheep 250 cubic feet of space.

A minimum floor-space must be insisted on in all cases, and it should not be less than one-twelfth of the cubic space. No room or building need be higher than 12 feet for health, therefore additional height must not be allowed to take the place of floor space; and if the height be below 12 feet, the floor-space must be increased.

Ventilating Area.—So many considerations enter into the calculation of apertures for ventilation that no fixed rule can be laid down as to size. A horse, as already said, fouls about 30,000 cubic feet, a cow 20,000, a pig 6000, and a sheep 4000 cubic feet of air per hour. To admit this amount of fresh air into a building, with a velocity not exceeding two miles an hour, which is just perceptible, will require inlet areas of 400 square inches for a horse; 300 square inches for a cow; 80 square inches for a pig; and 56 square inches for a sheep. But if we bring in air into a building we must take an equal quantity out; therefore if the inlets in a stable equal 400 square inches per horse, the outlets must also equal 400 square inches; and the same with other buildings. It is important to remember that in every case of buildings for live stock the ventilating area must be practically double the required inlet area.

Mode of Ventilation.—The completeness of the ventilation will depend upon the distribution and diffusion of the incoming air, and the situation and form of the inlets and outlets. In farm buildings these cannot be too simple. In most cases special plans of ventilation have been too elaborately contrived, and the very arrangements intended to favour the movement of air have tended rather to obstruct it. The power which moves the air, so as to make it enter and go out by the openings provided, is partly the wind, but much more the difference of the temperature between the inside and outside air. If, therefore, we simply remove obstructions to the movement of air, we shall, in most cases, do all that is wanted to accomplish our end.

Inlets.—The entering air must be pure, therefore no inlet must open into cattle-courts or other buildings, or over dung-pits, or anything else that will contaminate the ingoing air. As much as possible of the fresh air should enter in front of the animals, which then get the benefit of it before it mixes with the vitiated air. Part of the air coming in should also do so at or near the floor-level, to sweep out the lower stratum of air in the building; but this can only be done in front of the animals when there is a feeding-passage between their heads and the front wall. And to minimise draughts, and gain the greatest advantage from diffusion, the inlet openings should be small and numerous rather than few and large.

The form of inlet recommended for farm buildings is an opening having an air-brick in the outside of the wall, and a hit-and-miss iron grating inside to open or close as wanted. Ellison's ventilating-bricks have cone-shaped holes pierced in them, the smaller end of the cone being outermost, by which the entering air is distributed so that no draught is felt even close to the openings (fig. 7). Ordinary ventilating-bricks yield only about one-third of their gross size as available openings; the same with gratings.

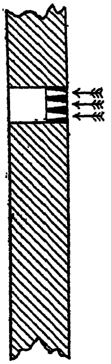
Fig. 7.—*Ellison's ventilating brick.*

For example, in a stable requiring 400 square inches of inlet to each horse, if we admit by three open apertures, each 24 inches × 6 inches = 144 × 3 = 432, the requirements are amply fulfilled. But as we are not admitting by open apertures, but by air-bricks and gratings, we shall need to have the apertures three times larger, or each 36 inches × 12 inches = 432. Two of these should be placed opposite to each other, one in the back and one in the front wall, within a few inches of the top, and the third one should be near the floor in the wall behind the horses (fig. 8).

In cowhouses, where the inlet required is 300 square inches per cow, when there is a feeding-passage in front, two of the inlets should be placed in the front wall, and one high up in the back wall, as shown in fig. 9.

In covered courts the walls require to be built close up to the eaves to prevent cold draughts, and air-bricks or gratings inserted in the walls to give the necessary fresh-air inlets.

Outlets.—As the vitiated air, charged with aqueous vapour and raised in temperature by the heat of the animals, ascends to the roof, it is there that outlets should be provided for its escape. A simple plan of doing this is by raising the upper part of the roof a few inches, and leaving a corresponding break and overlap the whole length of the building on both sides. This is effected either by cutting the principals, as shown in fig. 10, or by using principals of a uniform size the whole length, and then nailing a spar 3 or 4 inches thick and 3 feet long on the top ends of the principals. In either case, when the sarking is nailed on, there will be a break in the roof, and an open joint of so many inches, according to the rise, between each pair of principals. The sarking should be made to overlap a few inches at the break, and the same should be done with the slates when they are put on. This will carry any drip well over on to the slates below the break, and will also prevent any draughts blowing down upon the animals. A roof can be ventilated in this way at little or no additional expense, and there is no fear of the ventilators getting out of working order. It is very suitable for all buildings for live stock—stables and cow-

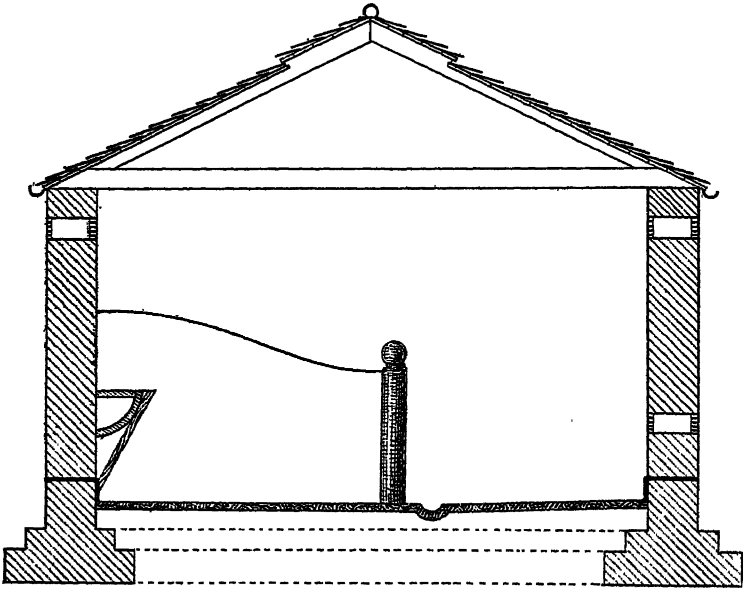

Fig. 8.—*Ventilators in stable walls.*

houses as well as covered courts—and the amount of outlet required in any case is easily calculated. For each horse it is about 400 square inches; and as a horse occupies 6 feet in width across the stable, a 3-inch opening, or rather less, all along the

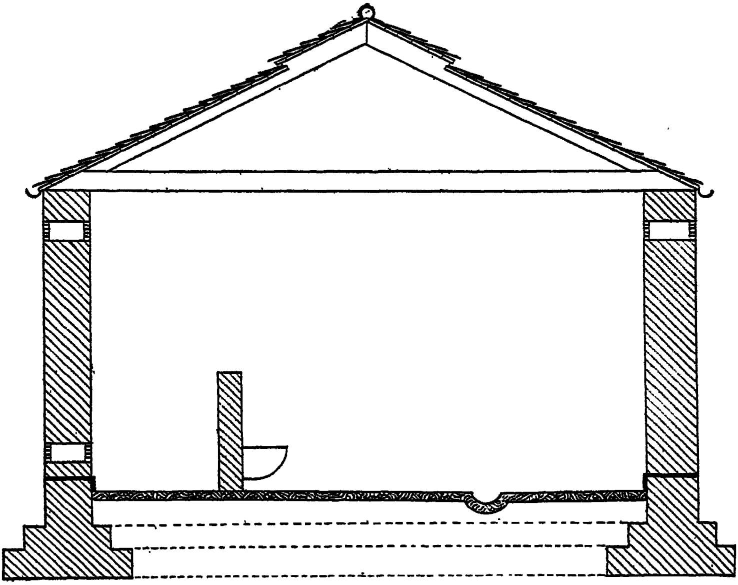

Fig. 9.—*Ventilators in cowhouse walls.*

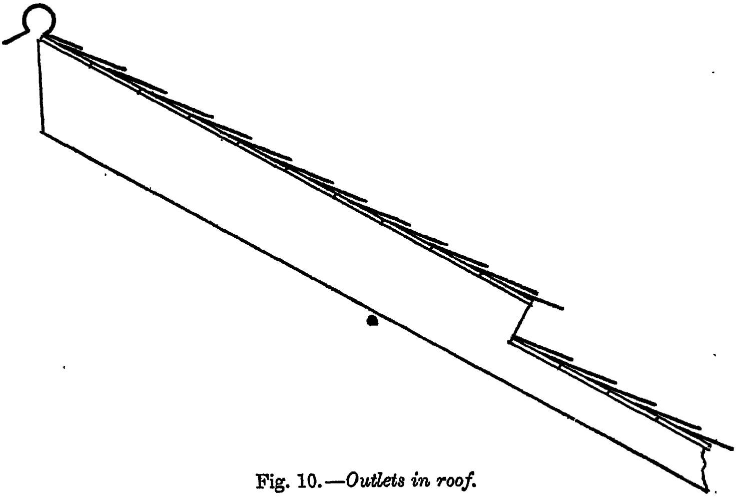

Fig. 10.—*Outlets in roof.*

roof, on both sides, will give the required outlet—72 inches × 3 inches = 216 × 2 = 432 inches. For a cow, which occupies 4 feet across the building, and requires about 300 cubic inches of outlet, a 3½-inch opening in the roof, on both sides, will be ample.

Lighting.

Light is another important factor in a sanitary building. Direct sunlight, and, in a modified degree, diffuse light, warms and dries, setting up currents which drive out stagnant and unwholesome air. Hence a stable or byre which admits daylight freely is far healthier than one which does not, for it is warmer and drier; the organic matter given off from the animals is more completely burnt up; and mildew is unable to exist there. Dr Downes[1] has shown that the action of sunlight on micro-organisms is very hostile to these lowly forms of life. Arloing has also found that the spores of Anthrax bacillus are killed by sunlight, and that more readily in the presence of air. The mere exposure to light does not destroy the virus of tubercle bacillus, if insanitary conditions prevail at the same time, but light, combined with fresh air and a dry soil, has a distinct influence in arresting the virulence. Want of sufficient light, therefore, constitutes one of the external causes which produce ill-health and disease amongst farm animals as well as amongst men; while exposure to the sun and daylight is one of the means of restoring and maintaining health, and of warding off disease.

We are apt to underrate the importance of sunlight as a health factor in the case of animals under cover, because a certain length of time is necessary for its absence to produce marked ill effects. That is to say, the ill effects do not demonstrate themselves in any very definite form of disease, but rather as variations in degrees of vitality. A lowered vitality, however, is the condition precedent to many forms of disease. And for young and growing animals, especially, sunlight is almost as necessary a food as air; for the blood-making organs require the raw materials of the sunbeams from which to manufacture in requisite amount those red corpuscles which are the chief carriers of air to every part of the body.

Light is an essential element of organic development, and as such has a direct bearing on many problems which have vexed the minds of generations of both breeders and feeders of live stock. Edwards, who was the first to study the effect of light upon the development of animals, found that darkness was inimical to differential development, although not so much to increase of size. He further found that the greatest effects were produced upon the youngest animals. Growth may continue in the absence of light, but elaboration is delayed. And as the arrest of organic development affects both nutrition and reproduction, it follows that not only the milking and the fattening qualities, but also the breeding powers, of animals are impaired by the absence of light.

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[1] Proc. Roy. Soc., vol. xi.

In flat contradiction, as it were, of these principles, it will be found that many—the majority perhaps—of farm-stables, cowhouses, and cattle-boxes are totally dark inside, at noonday even, when the doors are shut. Much of this exclusion of light is purely unintentional, and the result of badly planned buildings. On the other hand, as regards both dairy cows and fattening cattle, an opinion prevails amongst farmers that by shutting out the light the former will give more milk and the latter will fatten more rapidly. Rest and quiet are essential for both purposes; and, no doubt, animals do rest more, and eat less, in darkness than in the light; for light is stimulant, while darkness is sedative, and induces sleep. As, however, darkness blunts the appetite, lowers the vitality of the animal, and arrests differential nutrition, it is the reverse of favourable to either the secretion of milk or the laying on of fat. Let in daylight, then, not only upon young and growing animals, but also upon fattening cattle and milch cows. Health and increase in every sense of the word follow the light of the sun. It is quite impossible that either man or beast can ever have too much sunlight, or sun-warmth either, in our climate.

The relative amount of sunshine to be obtained in a building of any kind depends upon the aspect. The southern aspect is the best of all; but a building with windows back and front should preferably face south-east and north-west, so that the sun looks in on both sides during at least a part of every day. Dairies and milkhouses are usually given a northern aspect for coolness, but experience shows that an entirely northern aspect is undesirable even in the case of such buildings, for the rays of the sun purify the air and assist evaporation.

While the calfhouse should take precedence in the matter of sunlight, it is highly desirable that some, at least, of the sun's rays should daily reach the interior of every building in which animals are housed. The surest way of obtaining this is to have lights in the roof, with either glass tiles or thick glass lights without sashes; and for covered yards and the like no other lights are needed. Stables and cowhouses, also, are best partly lighted from the roof, but they require the addition of a few side and cross lights. For this purpose a single sash swing-window will be found most convenient, as it can be readily opened or shut as wanted; and with walls only 9 feet high the window should not be larger than 3 feet by 2 feet, so that it can be placed out of reach of the heads of the animals (fig. 11).

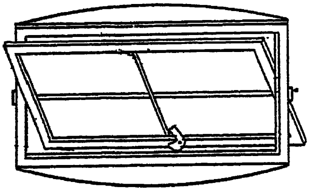

Fig. 11.—*Single sash swing-window.*

Windows and roof-lights together require to be at least one-tenth of the floor-space. Therefore in a stable, where a horse has a floor-area of about 114 square feet, if the roof-lights equal 6 square feet the windows in the walls ought also to equal 6 square feet for each horse. That is like placing one window directly over every second stall division, both in front and behind, and with 6 feet between the windows in each wall, as shown in fig. 12; but, of course, if a half more light were given from the roof, two wall windows between every four horses would suffice.

The windows, besides acting as ventilators in summer by wide opening, and between seasons for perflation, in winter act as excellent hygrometers by condensing the watery vapour of the interior air upon the panes. If this trickles down the glass, it is evidence that the production of watery vapour, accompanied by carbonic acid and organic matter, is in excess of the power of evaporation and of ventilation.

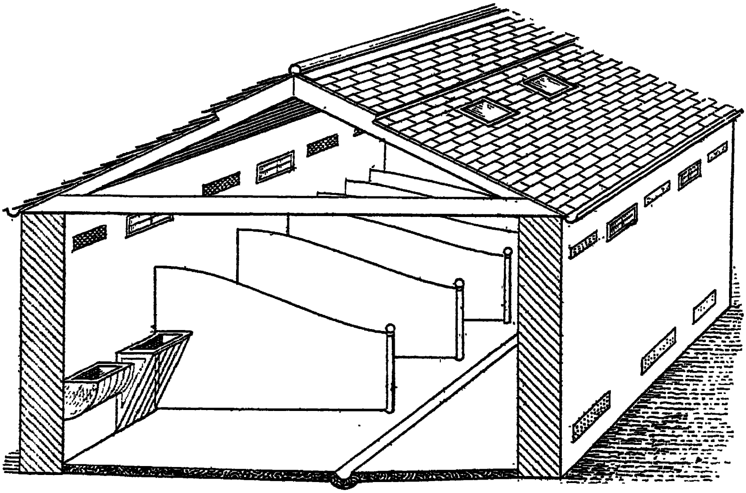

Fig. 12.—*A sanitary stable.*

Drainage.

The subsoil drainage of the site has been noticed already. It remains to consider the disposal of the liquid manure from the stock-buildings and dung-yards, and also the disposal of rain-water from the roofs. The neglect of one or both of these is an unfailing source of nuisance, and accounts for the filthy condition of the approaches to so many farmyards, not to mention polluted wells with all their bad effects, and a great waste of manure.

Rain-water.—The remedy here is to carry off the rain-water from the roofs separately; and, unless it is convenient to store it for washing and flushing purposes, to send it on its way direct to the nearest water-course. The eaves of all the buildings should be spouted, and the pipes leading from the eaves made to deliver into the open air on to a grating which covers the trap that leads to the subsoil drain. No rain-water must be allowed to touch the manure in dung-pits nor in yards, nor to run into the liquid-manure tank if there is one.

Liquid Manure.—This is usually drained off from the stables, cowhouses, and other buildings, either by open or covered drains.

In the former case it is carried away from the stalls by open channels or gutters which lead through the outer wall into the open air. It is hard to conceive any system more dirty, or in its widespread results more pernicious. As the floors or pavements within the building are usually rough cobble-stone, or at any rate seldom water-tight, and as the discharge is usually into open water-courses or open yards, the liquid manure infects the air by noisome exhalations, and by soaking into the soil contaminates the water-supply, and engenders disease.

The system of covered drains from live-stock buildings is scarcely any better. In the most improved methods of covered drainage for stables, the floors are paved with bricks set in cement, and a cast-iron gutter with a perforated cover, the latter movable, and laid nearly flush with the bed of the pavement, runs the whole length of the stable behind the horses. Into this main gutter, which has one or more trapped drain-pots in its length, a gutter leads at right angles from each of the stalls. In the case of loose-boxes, a trapped drain-pot is fixed in the centre of the box, and has short lengths of surface-gutter projecting from each of its four sides. There are movable safety-covers to each inlet, and the whole is connected with the drain leading to the outer yards.

Traps in stable-drains only delay the discharge of matters comparatively innocent in their origin, but which tend with time and favouring circumstances to become dangerous to health. It is recognised as undesirable for drain openings to exist within a cowhouse, mainly because cows are food-producing animals, and milk especially demands protection, but this bad condition is common in the best stables. That traps do not always prevent the noxious gases evolved in the drains from finding their way into the buildings is evident from the fact that milk has sometimes been found to receive disease germs in the milkhouse, where there was a trap passing down into the drains. The place of storage of milk is therefore of the utmost importance, and there must be no trap in the milkhouse or dairy any more than in the byre.

Stable or cowhouse drains of any kind, open or covered, are sources of continual nuisance, unless there be a plentiful supply of water to flush them well out at least once a-day.

The Tank System.—Whether open or covered drains take the liquid discharge from the stables and cowhouses, it is not done with. The common plan is to lead the drains to a liquid-manure tank. To this tank a pump is attached for daily pumping the liquid on to the dunghill, or on to the manure in the court-yards, or for emptying the tank into the liquid-manure cart, which carries it to the fields. Whichever way it is, the pump is a filthy plan, and never satisfactory at the best; for even if the tank be water-tight, there is always more or less overflow, which pollutes the soil and all around it, and is eminently conducive to the production and spread of disease. Too often, however, there is no tank, and the liquid manure is either run into the open yards or is allowed to discharge itself in the nearest open water-course, in either case making the whole place pestilent.

Conservancy.

Sanitation is largely concerned in getting rid of the waste-products of life. Ventilation, as we have seen, deals with the lighter or gaseous excreta which pass out through the lungs and skin. Conservancy, in its turn, deals with the solid and liquid excreta. The common method of conservancy, described under the head of drainage, is one of wanton waste, with nothing to show for it except tainted water-courses, foul yards, and reeking dunghills. This loss can be wholly averted by a proper conservancy system, with the use of dry earth in covered courts or stalls.

Loose-Boxes and Covered Courts.—The best conservancy arrangement is seen in the case of loose-boxes and covered courts, if the floors are water-tight and sunk a few inches below the level of the door-sill. The urine is then all absorbed by the litter, and as the dung is firmly compressed by the animals walking about on it, the air is excluded, and decomposition is arrested. Even then, of course, there will always be more or less escape of ammonia and irritating vapours from under the animals, if steps are not taken to prevent it. Urine, if simply mixed with the dung and straw, decomposes and sets free its ammonia within twenty-four hours; but mixing with dry earth prevents this. Therefore all that is needed to make this system of conservancy perfect is to daily sprinkle a layer of dry earth over the dung and litter on the floor of the loose-box or covered court, in order that the effete organic matters may be changed into harmless substances, and at the same time their power to fertilise the fields be fully preserved. This system obviates all nuisance, for there is neither drain nor gutter in connection with it, as there is no liquid to drain away. It is not desirable, however, to let the manure accumulate too much, as the fresher it is applied to the fields the better. The floor, therefore, should not be sunk more than 9 inches, and should have 3 inches of dry earth at the bottom, to be renewed as often as the dung is cleared out.

Stalls.—In stables and cowhouses, also, where the animals are stall-fed, the use of dry earth, or peat-moss, as an absorbent offers the best and simplest method of conservancy. There is very little trouble with it, and the manure, both solid and liquid, is completely deodorised. The gutters behind the animals are filled with dry earth as often as the dung is removed. Stable-gutters need not be larger than 9 inches wide and 2 inches deep, nor cowhouse-gutters more than 15 inches wide and 3 inches deep, on this system; and there is no sign of liquid manure, and absolutely no smell.

The quantity of urine voided by a cow varies a good deal according to the succulence of the food, but 1280 gallons per annum is probably a fair average. This is just 3½ gallons a-day, and will require 20 lb. of dry earth to absorb it, as the dung from the cow is very cold and deficient in the power of taking up the liquid part of the excreta. A horse will void about half as much urine as a cow, and as horse-dung is much drier than cow-dung, and more absorbent, 7 lb. of dry earth daily to each horse will be found ample for conservancy.

The amount of dry earth or peat-moss annually needed to absorb the liquid manure in stables and cowhouses, then, will be—

22 cwt. for each horse.
65 cwt. for each cow.

Say that there are seven horses and twenty cows in the stalls, the total quantity of dry earth required for one year will be 72 tons 14 cwt. There need be no difficulty in getting this supply on any farm, as, although peat-moss is preferable, almost any light and absorbent soil will answer, if prepared and put under cover in dry summer weather. A shed 30 feet by 15 feet if filled 6 feet deep will contain 75 tons of dry earth. If there is plenty of straw on the farm, and it is cut into 2- or 3-inch lengths and freely used for litter, less dry earth will be needed. But indeed there is no reason why both horses and cows should not be kept in loose-boxes or covered yards; and the stall system might then be abandoned with great advantage from a conservancy point of view.

Dung-Pit.—No dung from the stalls should be emptied into the cattle-courts. It is a filthy plan to do so, besides exposing one set of animals to contagion from the excreta of other animals. For this reason, and because it is seldom convenient to cart the dung daily to the fields from the stables and cowhouses, a dung-pit is necessary to take the manure from these buildings. If used for that purpose only, and emptied periodically, it need not be large. The walls should be 6 feet high, and cemented on the inside. The floor should be laid with concrete, and slightly concave or hollow in the centre. There should be a light roof with eaves projecting to exclude rain-water, and raised on corner posts high enough to permit free access on at least three sides, and to allow a free current of air. With 5 feet of dung inside, a pit 12 feet by 12 feet will contain 20 tons; 24 feet by 12 feet, 40 tons; and 36 feet by 12 feet, 60 tons. Each time the dung-pit is cleared out the floor should be covered with a thick layer of dry earth as an absorbent.

Conservancy-Man.—It would well repay the expense to keep an old man about the farmyard for nothing else than to look after the conservancy arrangements, and collect the manure from the stalls. The saving in liquid manure, and the greater amount of manure produced by the dry earth system, would far more than pay his wages, not to mention the greater gain in improved health of both people and live stock at the farm, from the greater cleanliness which prevailed, and the absence of all sources of pollution.

Water-Supply.

Pure water, and plenty of it, is as essential for health in live stock as in human beings. Yet there are few farm buildings—farmhouses and cottages included—where the water-supply is not either bad in quality or deficient in quantity, and sometimes it is both.

Sect. 8 of the Dairies, Cowsheds, and Milkshops Order of 1885 requires a cowkeeper for the sale of milk to satisfy the local authority in both respects. The question whether water for cattle is included in sect. 16 of the Public Health (Scotland) Act, 1867, is, however, attended with doubt.

With the certain knowledge we now have that many of the worst diseases from which both men and animals suffer are communicated by polluted water, it might be thought that personal interest, apart from Acts of Parliament, would suffice to make farmers exercise the greatest care in providing pure drinking-water to live stock. Ponds and open watering-places about a farmyard are very objectionable, as from various pollutions they invariably swarm with the germs of microscopical animal life whose very existence is dependent on a supply of septic or putrefactive matter. It is a pretty safe generalisation that all surface-waters and all shallow wells in the neighbourhood of leaky farmyards, pigstyes, cesspools, and privies, are liable and likely to be polluted sometime or other. Even deep wells are not safe with such surroundings. As has been proved by investigations into the origin of many serious outbreaks of typhoid and other fevers, pollutions may be soaked into wells from distances which seem impossible. Distances even of hundreds of feet between wells and cesspools or undrained farmyards are no protection against infection. Except there be good yard and house drainage, or some dry method of conservancy, there cannot be a safe water-supply.

In addition to live stock, dairy, threshing, and domestic requirements, with a large margin in case of fire, very little can be done in a sanitary direction where there is yard or house drainage without an ample supply of water. If there be any system of drainage, even of the simplest kind, from farm buildings, though it be merely from stable or cowhouse to the dung-yard, there must be ample water for flushing the drains and gutters daily. If the water-supply is not sufficient for this, in addition to all other demands that can possibly be made upon it, then drainage becomes a nuisance; for the water-carriage of excreta, whether animal or human, is only safe and good when the water-supply is sufficient to carry off everything effectually. If this is not done the drains and gutters are merely long cesspools, or nothing better. A proper pipe-supply of water should be laid on to every stable, cowhouse, cattle-shed, and dairy, with sufficient pressure to reach, by means of a hose, all parts that it is necessary to wash.

Lambing-Folds.

On many farms these are the only sheep-buildings to be met with. In any case, the sanitary condition of the lambing-fold is well worth more consideration than it gets, as a rule. Most of the epidemics of abortion and parturition-fever in ewes, which occur now and again in almost every flock at lambing-time, and often occasion a frightful mortality, arise from this neglect. The result of overcrowding and keeping sheep in large numbers, in small space, for weeks at a time, can never be good; but it is dangerous in the extreme when the soil is polluted by the germs of disease: and in the case of lambing-ewes, the feverish condition of the animals and the septic surroundings make the risk so much the greater.

Many farmers prefer temporary lambing-folds, from an idea that permanent folds are more apt to harbour contagion, and flatter themselves that by shifting the ground of the fold every year they escape this risk. The risk, however, is not in the age of the fold, but in defective construction. If the floor is impervious, and the drainage good, the fold will always be as safe as any fold can be against the germs of disease, no matter how long it may be used; whereas, if it be at all defective in either of these respects, it will not be safe from epizootic infection for a single week. And as a temporary fold must always be a rough erection, with nothing but the bare earth, or, what is just as bad, soiled litter below the sheep, to retain and nourish contagion, the risk is a hundred-fold greater than with a permanent fold constructed in accordance with sanitary principles.

It is impossible to disinfect a lambing-fold where the sheep are huddled together on the bare ground. The discharges from the ewes soak into and contaminate the soil, which does not seem to matter much when all is well; but if any epidemic breaks out amongst the flock, the germs of contagion find a suitable media in the filthy soil, and multiply and spread with a rapidity which sets all means of disinfection at defiance. A wooden floor, as has already been pointed out, is only a degree better than the bare ground; and no lambing-fold, or sheep-shed of any kind, can be made safe, in a sanitary sense, unless the floor is thoroughly impervious.

The conditions for health in the lambing-fold are as follows: The site dry and sheltered; the fold itself roomy enough to avoid overcrowding, even when the sheep are not under cover; separate enclosures for forward lambers, later lambers, and ewes already lambed; a floor or resting-ground impervious to both air and moisture; good drainage; and a scrupulous observance of cleanliness, by the daily removal of all waste matter, excreta, and soiled litter, and disinfecting with chloride of lime before any fresh ewes are allowed to come near the place where another ewe has lambed.

Having lately given readers of the 'Transactions' my ideas on the construction, flooring, and drainage of sheep-sheds,[1] I need only add here that although the plans given in 1894 were for circular sheds, the section of shed, the construction of the floor, and the mode of drainage recommended there are all equally well adapted for sheds of any other form, and will be found to fulfil all the requirements of a sanitary lambing-fold.

If a fire were kept burning day and night in the lee of the lambing-fold (as in the camp of an army) to burn all refuse and waste matter of an organic nature, whether animal or vegetable, such as the cleanings of the ewes that have lambed, and blood-stained litter from the pens and yard, it would greatly improve the health of the place. Usually such things are left lying about within the fold, or they are tossed over the hurdles, where the unlambed ewes, if they are allowed a fall back, as often as not are equally brought into contact with the putrescent substances. Any refuse that cannot or ought not to be burned, should be daily cleared away from the fold to a separate heap and disinfected, to make it healthy for manure, before it is spread on the fields. In every case all putrefying matter should be disinfected at once in the fold, in order to arrest or suspend its dangerous action until it can be removed.

Disinfectants.

Too much trust should not be put in so-called disinfectants. Most of them are little more than deodorants. All of them destroy or mask smell with more or less effect, but few of them actually destroy or neutralise infection. Some deodorants, as chloride of lime, counteract smell by chemical action; others again, as carbolic acid, counteract smell by masking it. The action of chemical deodorants is strictly limited by their amount and the relation they have to the substances attacked, whilst the masking deodorants are generally volatile, and let loose the original odour when they have more or less completely evaporated. If we seek actually to destroy disease germs, we can hardly trust any disinfectant of the deodorant class, except perhaps chloride of lime; but many of the others are useful as suspending, for a time at least, the virulent activity of the infection. In Glasgow the Health Department condemns the use of carbolic acid as a disinfectant, and for typhoid excreta use hydrochloric acid diluted in twenty times its bulk of water. For disinfecting the floors of farm buildings, cesspools, refuse-heaps, and the like, chloride of lime serves as well, and is much cheaper and safer to use. For getting at walls and roofs, we require an aerial disinfectant, and the best is sulphurous acid, or the fumes of burning sulphur. The ancient Greeks seem to have been of this opinion, for we find Homer, in the 'Odyssey,' Book 22, saying of Ulysses, that

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[1] Transactions, 1894, article "Shelter for Sheep."

> "With fire and sulphur, cure of noxious fumes,
> He purged the walls and blood-polluted rooms."

The inner surfaces of the walls of all live-stock buildings should be coated with cement. This makes them both non-porous and easily cleaned. They should also be regularly lime-washed, twice a-year at least, irrespective of any special disinfecting that may be called for as a measure of prevention or in dealing with an actual outbreak of infectious disease.

WENSLEYDALE SHEEP, THEIR ORIGIN AND LEADING CHARACTERISTICS.

By WILLIAM PARLOUR, Croft, Darlington.

WENSLEYDALE, "the finest dale in England," widely celebrated for more than one agricultural production, gives its name to a distinctive breed of sheep that deserves to be better known. Nominally a Royal Forest, Wensleydale includes the upper portion of the basin of the Ure, and lies between spurs of the Pennine chain, that, at first bold and precipitous, gradually melt into the flat and fertile district of the Vale of Mowbray. Few spots in England equal it for romantic beauty or historical associations. The ruined castles of Bolton and Middleham; the ancient abbeys of Jervaulx and Coverham; its mountains, precipices, scars, and rocky gills; its rushing torrents, waterfalls, cascades, and rapids; its lakes, forests, heather-clad hills, and fertile valleys, all woven and interwoven with legends, traditions, and stories, in which superstition, chivalry, and romance are equally blended, combine to render it one of the most interesting districts in the country.

Nor is its agriculture less worthy of study. High up in the dale corn-growing is almost unknown, but as the valley opens out choice alluvial soils tempt the husbandman, and heavy crops of grain and roots supplement rich old grass. From this district, into the plain beyond, over the summit of the mountain-chain into Lancashire and Westmoreland, and northward through Northumberland into Scotland, the Wensleydale sheep has worked its way, making many friends in its progress, and proving to be a breed of the greatest value.

Origin.

Wensleydales, or, to give them their full title, Wensleydale Long-wools, are the modern representatives of the Teeswaters, a breed that became extinct as a variety about the middle of the present century. According to Culley, who wrote about the year 1800, the Teeswaters themselves were descended from the same stock as the Lincolns, but by attention to size rather than wool they became in the course of time a distinct variety.

A little over a hundred years ago Teeswaters were a noted breed, occupying a confined district in South Durham and North Yorkshire, and of which the river Tees formed the centre. Many writers have described them, but to our modern ideas their descriptions are anything but flattering. They were credited with being the largest breed of sheep in the British Isles, but they attained their size at the expense of too much time, and only arrived at maturity at the age of two and a-half to three and a-half years. They were tall, ungainly, clumsy animals; hornless, and with white or spotted faces. Their wool was remarkably long, but thin and coarse, the fleeces seldom weighing more than 9 lb. Their size was found to be a great drawback, for they could not be kept either in large flocks or on bare pastures. They were not, however, without some good qualities. They were exceedingly prolific; their bones were small compared with those of other large breeds; they were firm handlers, and wide across the back; and the meat was finer grained than could be expected from such an animal.

As a breed Teeswaters were amongst the first to feel the good effects of crossing with Dishley Leicesters, and before the eighteenth century closed Dishley blood was introduced. According to Bailey's 'Agriculture of Durham,' published in 1810, Messrs Culley were amongst the first to try the cross; Robert Colling of Barmpton also journeyed to Leicestershire, and for several years hired some of the best rams obtainable; and following him his brother, Charles Colling of Ketton, Mason of Chilton, and Messrs Trotter, Seymour, Nesham, and Baker all adopted or adapted the new breed, and from their flocks and those of others the new blood percolated through the great body of the Teeswaters. What this did for them is thus graphically described by Youatt:—

"The consequence of this cross was a sudden and very considerable diminution in size. This at first somewhat alarmed the breeder, but he soon learned to appreciate the advantage of it. The carcass was smaller, but it was rounder and more compact, and the animal came to maturity earlier; so that considerably more sheep were kept and more mutton was produced on the same quantity of land than before. The Leicester mutton was not so delicately flavoured as the Teeswater, and yet the consequence of the cross was that the flesh of the Teeswater was evidently improved. The staple of the fleece was also shortened; but it was finer and closer, and a greater quantity of it grew on the same extent of surface. The wool, however, did not improve so rapidly as the carcass, and for a plain reason—that the Dishley sheep were at this time bred principally, or almost exclusively, with a view to quick fattening and early maturity. These were points which constituted the characteristic of the sheep, and were sure to be transmitted to the offspring. Any excellence of wool was accidental, and might, or might not, belong to the lamb."

By this period (A.D. 1825) Teeswaters had spread through the whole of Wensleydale, gradually superseding the native breeds; and being peculiarly adapted to the district, their headquarters changed from the valley of the Tees to the valley of the Ure. The reason for this is not far to seek: the big prices obtained for Leicesters, privately by Messrs Culley, and through the sale-ring by Messrs Charles and Robert Colling, excited the cupidity of breeders in Teesdale, and the majority gradually discarded the Teeswaters for the Leicesters and their crosses, though a few still preferred to keep their original flocks pure. But it was in Wensleydale, lying a little out of the track of the ever-increasing volume of trade that began to roll through the country, and with a sheep that suited the district, that the original Teeswaters survived longest.

They were not, however, destined to escape change. No doubt Leicester blood was infused in minute quantities from various sources, but it was from a ram named "Blue Cap," the acknowledged progenitor of many of the best flocks of modern Wensleydales, that the chief supply came. "Blue Cap" was lambed in 1839. He was by a very big Leicester ram that Mr R. Outhwaite hired from Mr Sonley, of Lund Court, Helmsley, for 40 guineas for one season, and was out of a Teeswater ewe. He was used as a shearling, and in 1841 was exhibited at the Royal Show at Liverpool. At that time neither masters nor men were allowed to enter the showyard until the judges had given their decisions, and by some mistake "Blue Cap" was shown with the shearlings, and disqualified, otherwise it is said he would have won easily. In confirmation of this it may be stated that his owner was offered, but refused, 100 guineas for him. Previous to the show an attempt was made to weigh him; but when he had easily pulled down 4 cwt. the attempt was given up. He was a striking animal, of very large size and almost perfect symmetry, and was allowed to be the best ram in the North of England in his day. One of his most noticeable features was a deep blue tinge about his head, ears, and skin, a property he transmitted to many of his offspring, and which to this day is carefully perpetuated in his descendants. He is spoken of as being wild and active in the extreme. He was used on Teeswater ewes (or Mugs, as they were then called in Wensleydale) for eight or nine seasons, and his sons, three-parts-bred Teeswaters, were extensively sold to the best breeders in the dale. This, the last allowable cross, remedied the natural defects of the original breed, and produced a race of sheep combining the constitution, activity, and lean flesh of the Teeswater with the symmetery and earlier maturity of the improved Leicester. A subsequent attempt to introduce Lincoln blood failed to have any good effects whatever.

It was about the year 1840 that Wensleydales were first introduced into Scotland. Mr MacQueen, of Crofts, Kirkcudbright, tried the rams on his blackface ewes with the best results, and up to the time of his death in 1855 took them in increasing numbers, sometimes from 100 to 150 in a season. Since then other private customers and dealers have continued the practice, and Scottish farmers are now amongst the best buyers of the breed. The merits of Wensleydales are not, however, so well known in some parts of Scotland as they deserve to be.

It is only quite recently that the name Wensleydale Long-wool was adopted. The first volume of the 'Flock-Book'

"When the Yorkshire Agricultural Society first offered prizes for the breed in 1876, the chairman of the Skipton Local Committee, at a loss to know how to describe them in the prize catalogue, communicated his difficulty to an old Wensleydale breeder. At that breeder's suggestion the term Wensleydale Long-wool was substituted for the somewhat uncouth yet time-honoured name of Mug."

The man who named the breed was the late Mr T. Willis, Carperby.

General Appearance.

The Wensleydale is not a sheep to be passed unnoticed, even by a casual observer: in general appearance it is the equal of any breed in the kingdom. Its size; its broad, open countenance; its strong neck, deep, wide chest, broad back, massive proportions, and long curling wool; and particularly its gay carriage, commands attention anywhere, and in any company. It is hornless, is well covered with wool underneath, and down its thighs and legs, and has a tuft of wool on the forehead. A special and peculiar feature is its blue face; the skin is often blue, not only on the face and ears, where it is plainly visible, but over the whole body. This gives it a distinctive and easily recognised character. About the rams there is a strong masculine appearance, but the ewes are finer, smarter, and what is called bloodier, quality always predominating.

Size.

Size is a strongly inherited property, as early records show. In 1777 a four-shear Teeswater, bred and fed by Mr Thomas Hutchinson of Sockburn, and killed and exhibited at Darlington on December 22 of that year, weighed 249 lb., being 62 lb. 4 ounces per quarter, and in addition yielded 17 lb. of loose fat. This was a wether of the true old Teeswater breed. At about the same period another was killed, belonging to Mr Dinsdale of Newsham, that weighed 54 lb. per quarter, and when alive was nearly the height of a Shetland pony. A lamb of this breed, five months and four days old, bred by Mr Henry Hutchinson, was killed at Stockton Races, 1794, and weighed 22 lb. per quarter (Culley). Many other authenticated instances of the heavy weights attained by these sheep could be given, but the above will suffice.

The Wensleydale is not now fed up to these weights; nevertheless the breed is still amongst the largest, if not actually the largest, in Great Britain. The big rams weigh up to 30 stones (of 14 lb.) live-weight, and the general run of shearling rams is from 18 to 25 stones. Royal Darlington, whose photograph is given in fig. 14, weighed 30 stones as he walked about last summer. It is, however, the smaller, lighter, and lighter-woolled sheep that are selected for running with blackface ewes on high and exposed situations. At certain shows there are special classes for these, proving that breeders not only recognise what is wanted, but lay themselves out to supply it.

Constitution.

A strong point of the Wensleydale is its exceedingly hardy character. Bred as it is, it could scarcely be otherwise. The dale itself lies 700 to 1400 feet above sea-level, and being comparatively narrow, rapidly ascends the lofty, heather-clad hills that enclose it to the broad expanse of moorland on the top. On these steep slopes many of the flocks are kept, never coming to the homestead excepting in the stormiest weather, or for a short period during the lambing season. Trained to travel over rough ground and to pick their living in the best way they can, the sheep are strong, hardy, active, and less liable to disease than

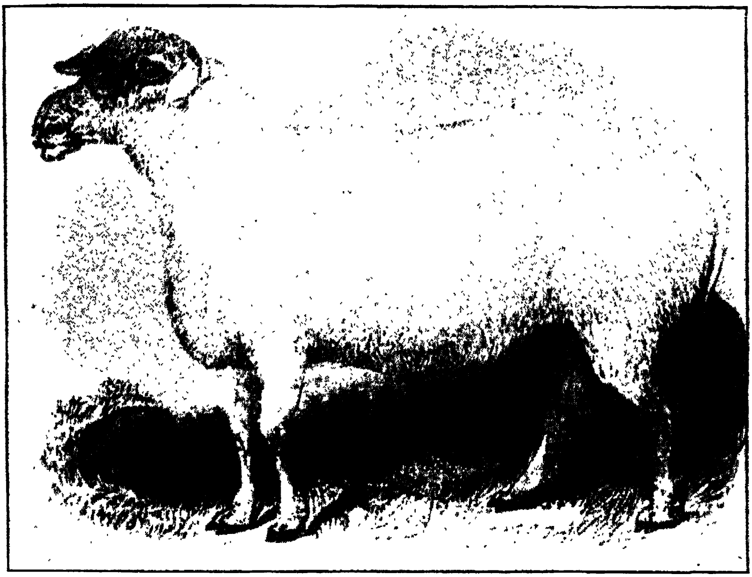

Fig. 13.—TEESWATER RAM (*from* Youatt's 'Sheep.')

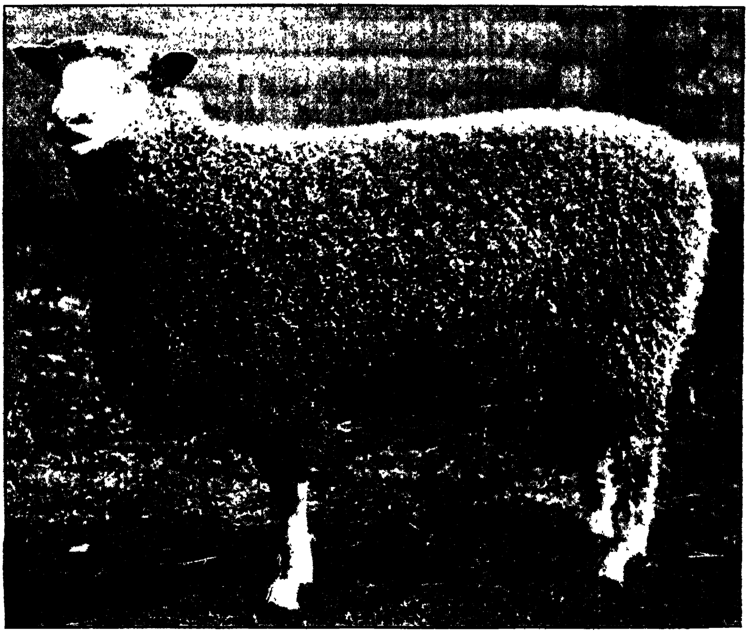

Fig. 14.—A MODERN WENSLEYDALE RAM, ROYAL DARLINGTON.
Bred by the late Mr T. Willis, Carperby, Leyburn.

more pampered breeds, and as a necessary consequence the rams are peculiarly adapted for following ewes over rough ground that less hardy varieties would find inaccessible.

Wool.

Wensleydale breeders have always paid particular attention to wool; and when mutton was at its highest they never lost sight of the fact that wool might at some time or other become of greater relative value. The majority of flocks have therefore been very carefully bred in this respect. The aim has been to keep the wool bright and lustrous, free from any suspicion of mistiness or fluffiness, and of equal staple throughout, the last point being especially insisted on. The consequence is that to-day few sheep have a more even fleece than the Wensleydale.

With regard to weight it is no uncommon thing for a mixed flock, ewes and hoggs in equal quantities, to average 8 lb. or 9 lb. each, or even more, whilst very heavy individual fleeces are occasionally met with: the latter run from a stone to 21 lb. As a two-shear, Royal Darlington's fleece weighed 20 lb.

As to quality, and the precise position the wool should occupy in the trade, the following extracts from a letter from Mr J. W. Turner, 24 Swaine Street, Bradford, one of the highest authorities on the subject, are very much to the point, and will be read with keen interest. They will come as a surprise to many who have never thought of the Wensleydale with regard to wool:—

"You may take it as a fact that there are hundreds of men in Bradford who understand wool and its uses thoroughly who know nothing whatever about sheep. They are consequently in the habit of giving a reputation to wools by the names which come to them from the country. I think you will bear me out when I say that throughout the whole of the West Riding of Yorkshire, when a farmer has wool of a somewhat superior order among the many cross-bred wools which are grown, he is pleased to call it Wensleydale. Consequently we see blackfaced and Leicester crosses, North Country mules, Lonk and Leicester crosses, and an infinite variety of cross-bred wools, good, bad, and indifferent, all of which come to us described as Wensleydale, and which, in my estimates of the growth of wool for the 'Bradford Observer' and other papers, I have classed together as mixed breeds.

"By the kindness of the hon. secretary of the Wensleydale Society, I have, however, been enabled to see what a Wensleydale really is, both in regard to sheep, wool, and mutton.

"I can only say that it has been a revelation to me, not so much of my own ignorance, but as to how a valuable breed of wool has suffered from loose and careless nomenclature.

"When I come to discover what the Wensleydale sheep really produce, I find that for the whole period covered by my experience we have been paying for it the very highest prices which have been paid for any wool of the lustre class. You will please observe that I class it among the pure lustre wools, but as it possesses, besides lustre, a fineness of fibre and a silkiness superior to any other lustre wool, it has always in the past (when lustrous goods were in fashion), and will always in the future, maintain a relatively high price.

"You must also please note very carefully that in order to understand what we were dealing in, and to avoid confounding the real article with the spurious one mentioned above, we have always traded in this article under the name of Ripon wool.

"As in the palmy days of the lustre trade, so to-day the title Yorkshire Hogs in the wool trade means the produce of wool from the Yorkshire Wolds.

"In the same way the genuine Wensleydale wool, although it is also Yorkshire, is distinguished by the title Ripon.

"I hope I have made it clear to you that we have always known the real Wensleydale wool by the name of Ripon, whilst the term Wensleydale as an article of commerce has always been understood by the average woolstapler to mean a kind of wool which might be any kind of cross known in the West Riding and parts of the North Riding of Yorkshire.

"Take it, therefore, for granted that the commercial term Ripon wool corresponds with the genuine Wensleydale.

"The Wensleydale breed comes within the lines I have laid down as to what are the desirable qualities in wool, some of which I will point out:—

1. It is pure in its lustre.
2. It is the finest quality of pure lustre, and this has been obtained by selection within the breed itself and not by the introduction of Down or half-bred Down blood.
3. It is silky in handle.
4. It is quite long enough in staple. (I venture to think that greater length is not desirable.)
5. It is very even in quality.

"You may probably understand what I mean by my second point when I say that *within* the lustre family the coarser the wool is the more lustrous it is. For instance, Lincoln wether wool is the coarsest and is the most lustrous. If you are therefore able to produce a wool, as in the case of Ripon, in which the lustre is quite pure and the fibre is at the same time much finer than Lincoln, you will easily see how the value is increased.

"In one small point I will venture to criticise it adversely. The staple is too small or thin, being what is known in the trade as 'whiplashy.' If in course of selection the staple (or lock of fibres) could be produced a little fuller or thicker it would be an advantage, and would probably result in an even better handle and better lustre.

"I would also put another point to you. There is used in this district a large quantity of wool which is known to the trade as 'North wool.' We get it from Northumberland, Cumberland, and all parts of Scotland. It is practically free from evidence of blackfaced blood, and although it is not pure lustre, it is soft, silky, and sound, and is altogether a most desirable article.

"Now I know of no breed which would be better for keeping North wool up to the mark than a cross of your own Wensleydale.

"North wool, through crossing with Southdown, Shropshire, or even Cheviot, has a tendency to gain fineness of fibre at the expense of lustre and solidity of staple. I have no doubt you would not have to go far from home to find clips which would illustrate what I mean."

After this breeders have a plain duty to perform. That duty is to see that their wool is sold under some distinguishing name, be it Ripon or Wensleydale (the latter for preference), known not only to dealers but to woolstaplers as well. Under no other circumstances can they be sure of getting full value for it.

Every flock has its black sheep, and this is particularly true when Wensleydales are in question. It is also true that the bluer the face the greater will be the proportion of black lambs and black wool. A few black fleeces have never been greatly objected to by buyers; and black rams are sometimes preferred for crossbreeding. In the latter case the progeny are said to have nice dark faces, and to very rarely, indeed, come black. It is well that these black sheep are not greatly objected to, for it will be a long and tedious business to "breed out the black."

Fecundity.

Again we have to go back to the Teeswater for the origin of this good property that Wensleydales possess to a remarkable degree. Writing of the former, Culley says: "The ewes of this breed generally bring two lambs each, and sometimes three. There are instances of even four or five, as was the case with Mr Edward Eddison's ewe, which, when two years old, in 1772 brought him four lambs; in 1773 five lambs; in 1774 two lambs; in 1775 five lambs." And two lambs in each of the succeeding two years. But beyond showing that it is no new, ephemeral quality, there is no need to go back into last century for instances. Quite recently Mr John Heugh of Mudd Fields, Bedale, reared in one season 40 lambs from 13 ewes. And amongst the records of last spring Mr J. O. Trotter of Holtby Grange, Bedale, had but one barren ewe out of a flock of 124, the remainder producing 244 lambs, including 17 trebles, and 1 four; Miss Willis of East End House, Carperby, with a flock of 34 averaged two each; whilst the executors of the late Mr T. Willis of Manor House, Carperby, with a flock of 45 ewes had 15 trebles against only 3 singles, rearing well over 90 lambs. These are a few examples collected at random: they could easily be extended, and probably surpassed, if a careful investigation were made. Sufficient, however, has been written to show the Wensleydale to be exceedingly prolific.

Flesh.

The quality of the mutton leaves nothing to be desired. The Teeswaters, big and ungainly as they were, yielded meat "finer grained than could be expected from such an animal," and this property has been well preserved. The modern Wensleydale when killed is full of lean meat of high quality. Even old draft ewes when sold off fat contain a large proportion of lean mutton. Where some of the smaller, less hardy, and fat-forming breeds put on tallow the Wensleydale puts on toothsome mutton; and the difference in the carcasses of the two varieties when hung up side by side is very marked. It is a very common thing to hear butchers express their satisfaction at the quality of the meat.

A noticeable point about the sheep is the way it handles: it has a firmness of touch difficult to find elsewhere.

Crossing.

For purposes of crossing the Wensleydale is pre-eminently adapted. Being an old-established breed, it is very impressive, and sires a lamb partaking of many of its own good properties. With blackface ewes no other variety crosses better. From the manner of their breeding the lambs are able to follow the ewes over rough ground, and farmers can rely on getting additions to their flocks that will grow into tidy, shapely, compact sheep, with nice black faces and good fleeces, and that will eventually furnish a carcass of mutton able to command the highest price on the market. Wensleydale, Swaledale, and the surrounding districts produce this class of lamb in thousands and tens of thousands; and at many of the local autumn fairs they greatly preponderate over all other varieties. They are bought by lowland feeders, who, on grass or turnips, bring them out fat at from nine to eighteen months old, according to treatment. In some localities these cross-breeds are known, and have attained a reputation, as "Mashams," being named from the fair at which they are largely sold.

A second cross, the progeny of which are three-fourths Wensleydale, is also somewhat extensively made, many farmers keeping and being proud of their flocks of half-bred ewes. So far from these "twice-crossed" sheep being mongrels, as is too often the case when breeding on similar lines is followed, they partake even to a greater degree of the better qualities of the rams, and are worth a correspondingly higher price.

The Wensleydale also crosses well with the Cheviot, the Lonk, the Herdwick, and many other varieties.

The latest cross that has been tried is with the Merino. A trial shipment of a few Wensleydales was sent to New Zealand a short time ago, and the first progeny of a cross between Wensleydale ram and Merino ewe took first prizes both for wethers and gimmers at the Canterbury, N.Z., show held last Christmas.

Grazing Properties.

It has never been claimed for the Wensleydale that it is the breed *par excellence* for early maturity. With generous treatment it may and does furnish a heavy carcass of lamb at an early age, but, speaking generally, it is the sheep for turnips and summer grazing. It is under these circumstances it is seen at its best. As a breed it has been too little exhibited, but a year ago a pen of Wensleydale shearlings stood first for fat wethers both at the York and Leeds Christmas shows. At the latter place they won also the cup for the best pen of sheep in the yard, and the present year repeated this performance. When slaughtered they were found to be of high quality, the mutton containing a large proportion of lean.

The pure breed is not generally available for grazing, the reason being that so many—perhaps too many, for breeders would consult their own interests by weeding out all below a certain standard—are kept for breeding purposes: half-breds, however, form a good substitute, and in many districts surrounding Wensleydale no other class of sheep is considered equal to them.

Management.

Breeding is conducted on the most natural conditions possible. Rams are put to the ewes late in the season; Wensleydale is not an early district, and to have a heavy-cropping flock lambing down when there is only a distant prospect of grass is an eventuality that few breeders care to face. From the middle to the latter part of October, and into November, then, is the usual time for mating. At this period it is customary to have the ewes fresh, and if possible to save a good "stray"[1] for them, this being universally considered to influence the crop of the lambs. If the winter is open the flock gets little or no assistance, but hard frosts and heavy snowstorms necessitate the drafting into sheltered situations near haystacks, hay being the almost exclusive fodder. At the lambing season the ewes receive cake or corn, with turnips if there happens to be a breadth of arable land.

The lambs as they are dropped are sheltered for a few nights, but the older ones gradually make room for the younger. The ewes are excellent mothers, many of them being able to rear three lambs without assistance, and this being so, the lambs themselves are soon afoot, and seldom receive or require much attention. At the end of a few weeks both ewes and lambs are turned away, and thenceforward shift for themselves.

This, then, is the very easy, simple, natural way Wensleydales are bred and reared. For show and exhibition purposes a different method of feeding is adopted, but this is outside the scope of the present article.

Conclusion.

For the Wensleydale there is a wide sphere of usefulness, and it only needs to be better known to be more appreciated. It is the old Teeswater, with a dash of Dishley Leicester snugly incorporated, and of all the long-wools claims (and probably justly) to give the best mutton, its crosses all possessing this desirable quality. It has never at any time been pampered, and for constitution, activity, and hardiness cannot be surpassed by any large breed. The ewes are prolific, good milkers, and only require the most ordinary attention. It is little liable to disease, is thrifty, and clips a good fleece of valuable wool. It does well on rich pastures, giving generous returns for skilful management, but it is in the wilder districts, the heaths and uplands, the hilly regions, where thin pastures meet broad expanses of heather, where stiffer clays and bleaker climates starve out soft and tender animals, that it is eminently useful: here its native vigour asserts itself, and it is able to live and prosper and leave behind a race of profitable descendants.

It is only of late years the greater agricultural societies have recognised it, but it now has a permanent place in their prize-lists, and many to whom it was scarcely even a name have had, and will have, an opportunity of seeing it. Breeders have banded themselves together—a very necessary step when interests are to be forwarded and a reputation made and sustained,—and there

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[1] A fairly extensive run, including mixed grazing—as, for instance, grass and clover.

Fig. 15.—Wensleydale Gimmers.

The property of Mr H. Dewhurst, Skipton. Bred by Mr J. Rhodes, Stokeld, Wetherby.

seems little doubt but that the Wensleydale will soon spread over a much wider district than it at present occupies.

Interesting representations of the ancient Teeswater sheep and of the breed in its modern development are given in figs. 13, 14, and 15.

SECURING GRAIN IN WET SEASONS.

"THE RICHMOND DRYING-RACK."

By GEORGE W. CONSTABLE, Traquair Estates Office, Innerleithen.

THOUGH the history of agriculture dates from the earliest ages, the artificial drying of grain is of recent birth. And the reason is not far to seek. Agriculture was carried on in the world's early history under circumstances and in climes where little or no difficulty was experienced in harvesting and securing the crop. The difficulty rather was to obtain sufficient moisture to ensure growth and maturity.

In Britain, however, especially in the past twenty years, the reverse has been the rule. The weather during most recent harvests has proved far from satisfactory, and this, coupled with falling prices, has heavily handicapped the British farmer. As yet little or nothing has been done to attempt to combat our fickle climate. It seems strange that while every invention that can be found for minimising labour and furthering work in the time of tilling, sowing, and reaping, is to be seen on most farms, there are but very few on which there is any appliance for the purpose of securing wet grain.

The wit of man seems to have been concentrated in cultivating and producing the best crops at the least possible expense; but *there* it seems to end, and though time after time, harvest after harvest, crops after reaping have been partially or wholly lost, little or no change is to be found in our old-fashioned system of waiting till the grain is ready to stack. Those who advocate and practise a policy of trusting to chance, and blindly waiting on Providence for help, without using every means to help themselves, will assuredly find themselves heavy losers in the long-run.

Unsuccessful Ventures.

In 1882, at the Royal English Show at Reading, two systems for artificially drying grain were submitted for trial—(1) Gibb's hot-air method, and (2) Neilson's exhaust fan system. Without entering on a detailed account of either, we may simply state that both turned out failures—so much so, indeed, that the judges could not see their way to award either a prize. Neither of the methods succeeded in effectually drying corn in bulk, and both were discarded as unworthy of further experiment.

Make-Shifts.

In late districts farmers have availed themselves of wire fences for partially drying sheaves, either by laying them against the fence on both sides, or setting them, grain down, over the top wire. Then stone walls are often used for building stacks over, to encourage a draught of air and prevent the stack "sitting." Wooden erections, of the hurdle style, have also been used. But all these are at best mere make-shifts, only resorted to as a last expedient.

The Richmond Rack.

The Richmond drying-rack is without doubt the most perfect invention which has yet been brought before the public for thoroughly and efficiently drying or securing damp grain, combining as it does simplicity of construction and large capacity with a minimum amount of labour and expense.

Construction.

The Richmond rack is composed of two large parallel wire fences (see fig. 16). The two sides are 5 feet apart, and can be formed of any length, from 100 to 130 yards long being considered amply sufficient for a moderately sized farm.

The usual height is 16 feet, and the whole erection is covered with a roof of corrugated iron. There are four large straining-posts, one at each corner, while intermediate standards (*X X*, fig. 17) are erected 4 yards apart, on which the wires, after being secured to the straining-posts, are supported. The straining-posts, which should not be less than 10 inches in diameter at the small end and 22 feet long, must be sunk into the ground at least 6 feet. A beam of wood 9 feet long and 6 inches in diameter at the small end ought to be put across the foot of both posts to act as a heel, and the strainers should be embedded in concrete from the foot of the post to about 2 inches above the level of the ground (fig. 18), and thus secure the post from yielding a hair's-breadth. Strong stays are also required, firmly founded and secured, to assist the strain of so many wires.

The uprights (*X X*, fig. 17) and the struts or rances (*Z Z*, fig.

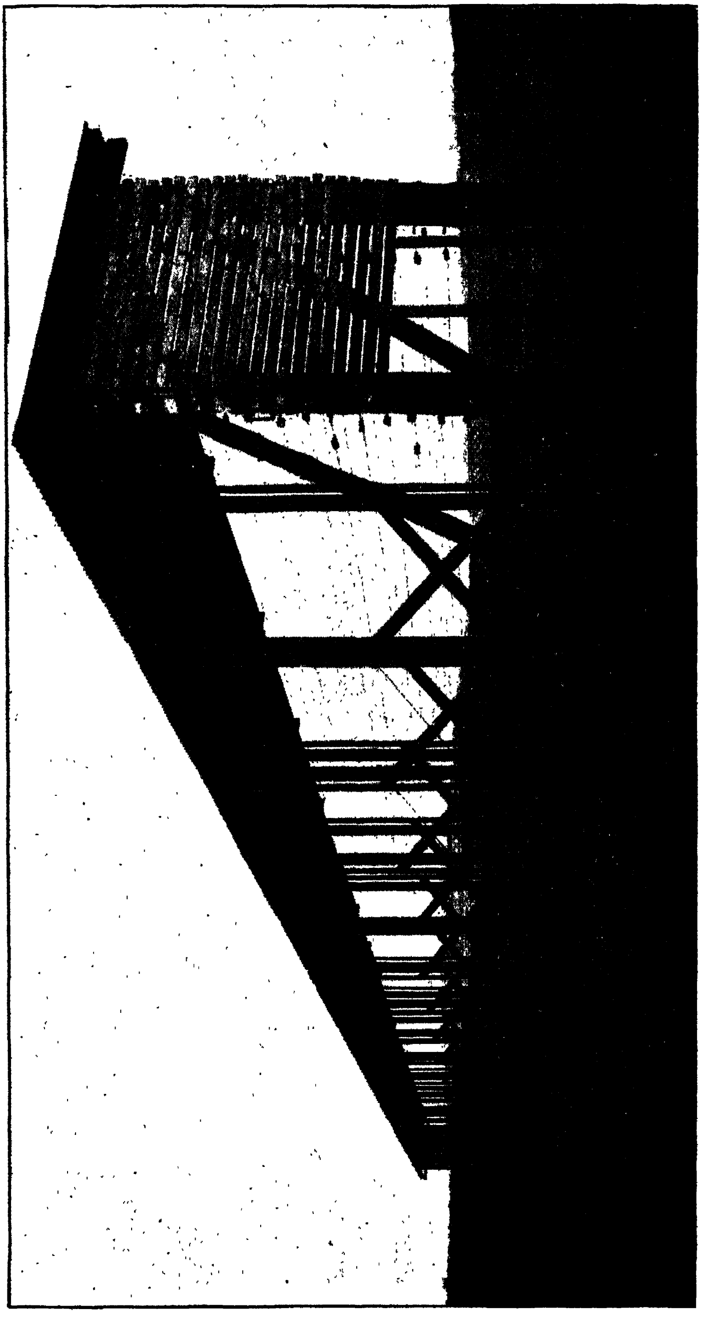

Fig. 16.—Richmond Drying-Rack—Empty.

17) should rest on square fireclay bricks or flat stones, raised so as to have the top about 2 inches above the ground.

Staples are used to support the wires on the intermediate standards. The staples should be driven in the standards at a steep angle, and so driven that the wire will rest on both legs of the staple, and just sufficient left undriven as will support the

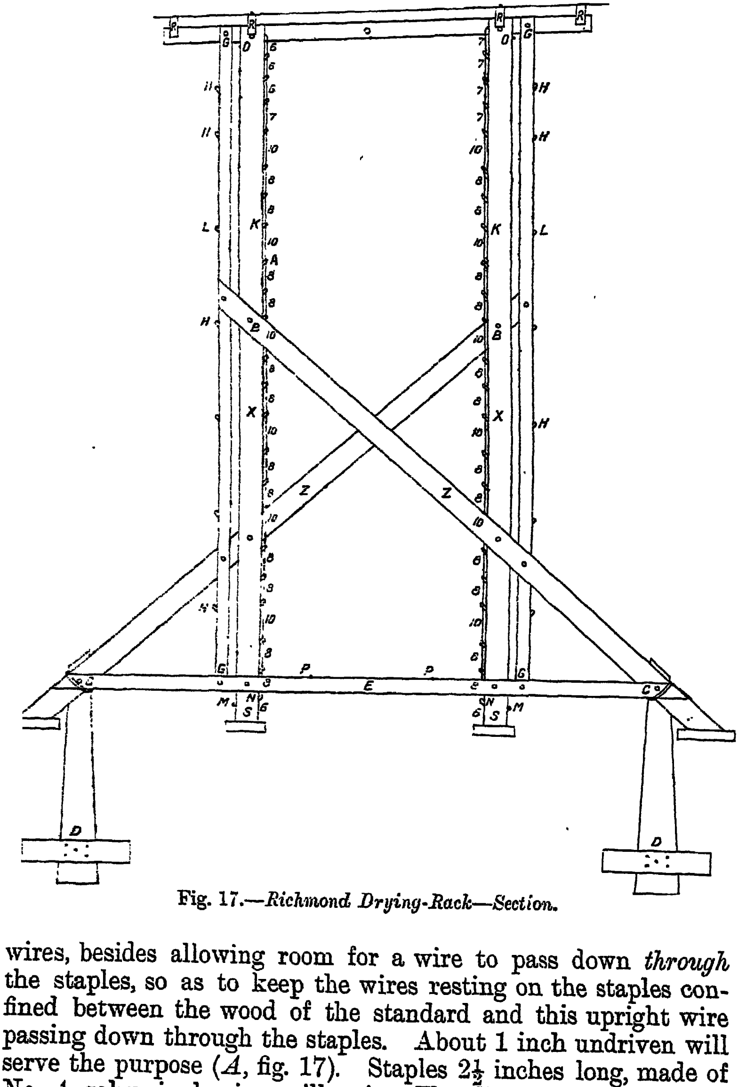

Fig. 17.—*Richmond Drying-Rack—Section.*

wires, besides allowing room for a wire to pass down *through* the staples, so as to keep the wires resting on the staples confined between the wood of the standard and this upright wire passing down through the staples. About 1 inch undriven will serve the purpose (*A*, fig. 17). Staples 2½ inches long, made of No. 4 galvanised wire, will suit. The distances between the staples on the *inside* of standards should be 8 inches, 8 inches, and 10 inches respectively from top to bottom, or according to the size of sheaves made—the first staple beginning 6 inches from the foot of the inside of the standard (*N*, fig. 17). Each standard should be ranced both ways, and the rances should pass through the 10-inch or wide spaces on both uprights (*B*, fig. 17).

Bolts should be used for fixing the rances and crossbars to the intermediate standards.

A strong larch post should be pitted, not driven, at least 3½ feet into the ground at the foot of each rance, and bolted or strongly nailed thereto, also strongly secured by twisting and stapling wire several times round post and rance (*C*, fig. 17). The thick end of the post should be sunk in the ground, and a crossbar 1 foot long should be notched and nailed to foot of post (*D*, fig. 17). The foot crossbars of standards (*E*, fig. 17) should be about 3½ inches wide by 1½ inch thick. The top crossbar (*F*, fig. 17) should be 3½ inches by 2 inches and 9½ feet long.

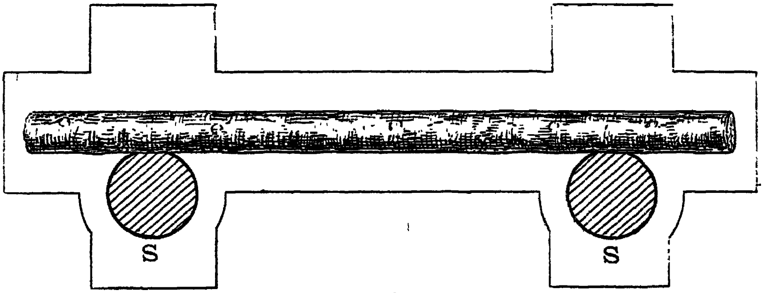

Fig. 18.—*Cross-beam fixing Strainers.*

The uprights of intermediate standards should be made of battens 16 feet long, 6½ inches by 2½ inches, and the rances should be 6 inches by 2 inches.

A batten 2 inches by 3 inches should be fixed by bolts to top and bottom crossbars, and also to the rances (*G*, fig. 17). This batten should be 2½ inches distant from the standard; a staple should be driven into the batten opposite *each wire-space of* 10 *inches* and 2 inches below the level of the staple at the top of the 10-inch space on the standard (*H*, fig. 17).

The staples in the batten should be driven in the same way as those in the standard, so as to support the outside wires, and a wire should be passed down through the staples, as in the standards. The outside wires will thus be 1 foot distant from the inside wires.

Wires.—No. 6 wire (galvanised annealed) should be used, and a hand ratchet should be employed for stretching each wire. The wires are stretched between the end straining-posts and rest on the staples on the inside of the standards, also on the staples on the outside of the batten (see *K* for inside wires, and *L* for outside wires, fig. 17).

An additional wire should be firmly stapled on the *outside* of the standards 1 inch below the level of the lowest *inside* wire, to keep the posts from moving off the bricks or stones (*M*, fig. 17).

The lowest *inside* wire should also be firmly stapled for the same purpose (*N*, fig. 17).

A wire ought also to be stretched between the straining-posts and affixed to the top of each intermediate standard (*O*, fig. 17), so as to keep the standards in an upright position. A couple of wires, or more, should be stretched from beams fixed to the outside of the straining-posts, the said beams being on a level with the foot crossbars of the standards, the wires resting on those foot crossbars (*P*, fig. 17). Nails can be used to keep these wires in their proper place, enough being left undriven for that purpose. These wires form a floor to keep the heads of the lowest sheaves off the ground.

Roof.—The most suitable roof is corrugated iron. If the inside wires are 5 feet apart, the roof should be 10 feet wide. An incline of half an inch to the foot will be sufficient.

The four runners (*R*, fig. 17) supporting the roof should be 5-inch battens, in lengths sufficient to cover two spaces between intermediate standards, and should be notched 2 inches into the top of intermediate standards and top crossbars (*R R*, fig. 17).

The runners, besides being nailed to the top of the standards and crossbars, should be strongly stapled down with wire. The corrugated iron should be bolted or screwed with washers to the runners.

The runners must not be nailed to the ends of the strainers, but should be kept in their places by being passed loosely through an iron socket, so as to allow for the slight yielding of the strainer brought about by the wire pressure. If this is not done the roof may bulge. Top crossbars should be attached to the strainers, the same as those on the intermediate standards, but the runners should pass through an iron socket and not be nailed to the crossbar.

Filling the Rack.

Three buildings or layers of 5 feet each will be found most convenient. One building from the ground and two from platforms are thus required.

The platforms are formed of two planks supported on two brackets, a sketch of which is seen in fig. 19. The hanging rod (fig. 20) of the bracket is hooked on to the standard above any wire at the height necessary, and a few links of a chain at the other end of the rod affix it to the bracket. The bracket (fig. 21) is made of hard wood, 4 inches by 2 inches, with a strong iron clasp. It rests on an inside wire; but as the planks are on the end of it, the most of the pressure is inward, so the stress on the wire is lessened. The bracket and rod are easily removed.

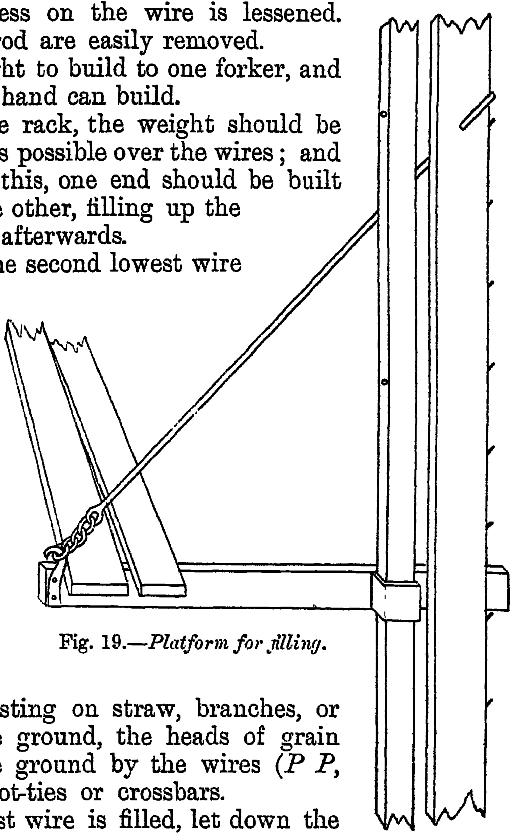

Fig. 19.—*Platform for filling.*

Two persons ought to build to one forker, and any ordinary farm hand can build.

When filling the rack, the weight should be distributed as far as possible over the wires; and in order to attain this, one end should be built so far and then the other, filling up the intervening spaces afterwards.

In filling, raise the second lowest wire off its supporting staple and hang it by an "S" hook to the wire immediately above, so as to allow room for the first wire to be filled with sheaves. The sheaves should slope downwards by being overbalanced *outwards*, the stubble end of the first row of sheaves resting on straw, branches, or stones laid on the ground, the heads of grain being kept off the ground by the wires (*P P*, fig. 17), on the foot-ties or crossbars.

When the lowest wire is filled, let down the wire above to its original place, and lift the next one above to the wire above it; then lay the sheaves across the one wire, the stubble end of the sheaf resting on the stubble end of the sheaf below. The next row should be done in the same way.

When the outside wires are reached, a handful of the stubble end of every third sheaf (or if the crop is a short one, every second or each sheaf) should be passed underneath the outside wire, and the sheaf drawn outwards till the wire nearly touches the band of the sheaf. The double wires at these regular

10-inch spaces give a downward slope to the sheaf, as in a well-built stack; they also prevent the body of sheaves from slipping outwards, acting like a through-band in a wall, and they further admit ventilation between this row of sheaves and the set below. Air-holes may be left at intervals if required, according to the condition of the grain.

Newly cut grain can be packed more closely than grain which has been soaked with rain after being cut.

When filled, a space exists within the rack from end to end between the heads of the sheaves, allowing air to play on the loose heads of the sheaves, and thus obviating the smallest chance of heating. The rack filled with grain is shown in fig. 22.

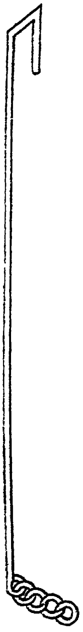

Fig. 20.—*Hanging Rod for Platform.*

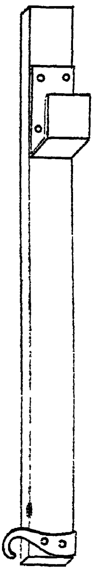

Fig. 21.—*Bracket for Platform.*

To prevent a half side-wind from blowing sheaves outwards, both ends of the rack should be sparred to about half-way down: the spars should be about 1 inch apart. Put wire-netting on the lower half in order to keep out birds.

The end of the rack should if possible face the prevailing winds, and it should not be put in a sheltered situation. The most convenient site for it is alongside a farm-road.

The ground does not require by any means to be level. The only precaution necessary is to see that there is not a hollow between the extremities of the rack, as such would have a tendency to loosen the wires when tension is applied.

In determining the height of a rack to be erected, calculation should be made so that the first outside wire from the top should not be more than 16 inches from the runner that supports the roof; and when filling, care must be taken that the sheaves are packed close up to the runner. Two sheaves deep are generally required for this purpose on the top wire, and if necessary more can be packed in. If the sheaves are dry, they cannot be packed too firmly together, and though damp, must not be packed too loosely, as the wires keep the weight of the sheaves from pressing from above. And this, in fact, is one of the secrets of the success of the rack. No matter how damp the sheaves may be, they cannot get closely pressed together, and the air always can obtain access.

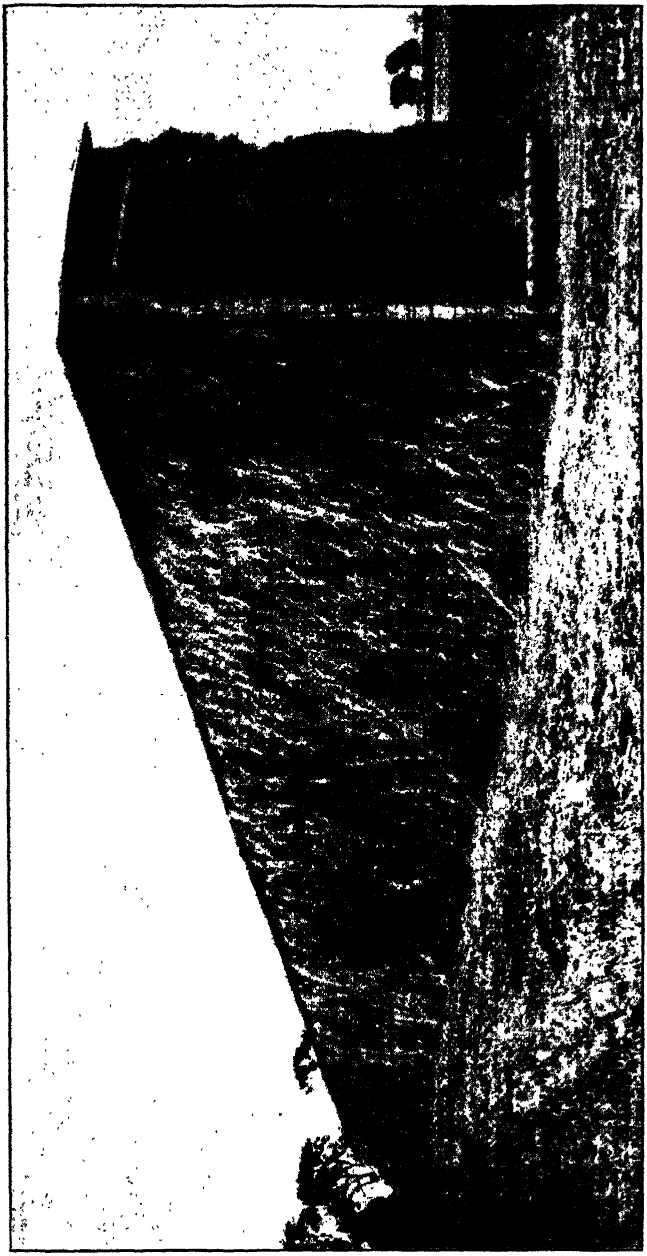

Fig. 22.—*Richmond Drying-Rack—full of grain.*

Contents.

A rack 100 yards long, 16 feet high, with wires distant from each other 8 inches, 8 inches, and 10 inches respectively from top to bottom, will provide room for about 20,000 sheaves.

About 800 sheaves, 8 inches in diameter, may be taken as an average crop per imperial acre; and thus a rack of the above dimensions will hold the produce of fully 25 acres.

It must, however, be clearly understood that it is quite possible to fill and empty the rack at least twice in one harvest. Thus if a crop, say, of barley, be put in dry immediately after cutting, should the weather be at all favourable, in a short time —a few days at most—it will be ready to thresh, and the rack can be again filled. Of course, if the crop be put in *very* wet, it necessarily will require a longer time to get into condition, but it cannot heat or go wrong.

Advantages of the Rack.

The advantages claimed for the Richmond rack are not confined to the saving of the grain and straw in a bad harvest. When the rack is used the crop can be carted straight from the reaper or binder without being stooked, and each day's cutting might be secured by night. Then the rack saves thatch, ropes, kilns, bosses, and props, and the setting up and moving stooks in bad weather. No skilled hands are required for building; any ordinary farm hand can build. It dispenses with keeping on extra hands at a high wage in a late protracted harvest, and the owner of a rack can have all his hands employed filling the rack when other harvest work is at a standstill. It enables the farmer to clear the ground of grain much sooner, so that stubble-ploughing or other work may be proceeded with. The grain gets into condition for threshing much sooner than in a stack; and invariably the weight per bushel is increased and the quality of the grain is superior.

In a good season all crop round woods, hedgerows, and in sheltered positions can, with the aid of the rack, be at once secured after cutting; and thus what on most farms is the worst conditioned grain—no matter how good the season may be—is by the rack made equal to the best.

Convertible into a Shed.

If the season be exceptionally fine, the rack, by removing the wires (a simple process), can be converted into a shed for filling with grain, when in this way it will hold four times as much as with the wires. Thus a rack 100 yards long, turned into a shed, will hold 100 acres of average crop, and no thatch, ropes, bosses, or props are required. Grassy barley can be led whenever cut, and the straw becomes in the rack equal to hay.

Evidence of Farmers.

It may be well that some corroborative evidence of the advantages claimed for the rack should now be given.

Mr John Dickson, Perth, a well-known land agent, and frequent contributor to the Press on agricultural matters, writes (1891):—

"These racks might be erected to hold half the crop of a farm, and in the *beginning* of harvest the sheaves, instead of being stooked, may at once be carted into the rack. The latter half of the crop could be stooked and stacked; but if bad weather sets in the rack can be emptied, and the produce either threshed or stacked, and refilled with the crop in stook.

"If the rack is first filled with newly cut but dry sheaves, they will be ready to thresh in a week, or ten days at most. The other half of the grain on the farm can then be got into the rack before being seriously damaged, and if put in wet would have plenty time to dry before either grain or straw would be required. The rack I write of was last year three times filled and emptied during the one harvest."

Mr Stewart, Moneydie, Perthshire, writes (1891):—

"As I happen to live in the immediate neighbourhood of one of Mr Richmond's farms on which the rack has been in use during the past year, and as I took a considerable interest in the working of the invention, might I be allowed to point out a few of its advantages, so far as they came under my own observation?

"Sometimes during the season, when the morning happened to be dewy or the day too wet for cutting the crop, all the workpeople were employed in getting the rack filled—taking, to begin with, such oats or barley as lay in hollows or in grassy or wet land.

"When the whole crop was cut, and very wet weather had commenced, the rack was emptied, its contents being either threshed or stacked, and refilled with grain from places most sheltered by woods. Last autumn the greater part of the rack was in this way used three times.

"In every instance, during the whole harvest—in all kinds of weather—whatever the condition of the crop might be when it entered the rack, it came out in a few days fit for either the threshing-mill or the stackyard."

Mr J. Burt Marshall of Luncarty writes (1892):—

"I erected a rack last year. My land is surrounded with trees, and the crop very difficult to harvest.

"The rack was filled with crop dripping wet—in fact it seemed absurd to expect it would keep. It was, however, a perfect success."

In 1895 a Perthshire tenant claimed damages against his landlord for loss sustained through the partial destruction of his rack by the great storm in November 1894, and the case came before the sheriff.

A number of witnesses were examined on both sides. One witness said: "I have had a rack four years. It holds 30 acres. The expense of stooking is avoided. It would take a man 7½ days to stook at 4s. per day = 30s. The saving of thatch I estimate at £5, the saving in ropes at 37s. 6d. Bosses and props an annual saving of £1. Stooks standing on young grass did damage, it might be, to the extent of £3. At least 1 lb. per bushel is gained in weight by the rack, and the quality of the grain better. The rack should give 2s. per quarter more value because of the better quality, and the fodder is much superior."

This witness estimated that the rack saved him in money £27, 7s. 6d. plus the extra quality of his straw.

Another witness said: "I have had a rack for a considerable number of years, 70 yards long. I would not want it for less than £50 a-year. Roughly speaking, it was worth £60 to me last year."

More evidence of a similar nature followed, but not one witness on either side condemned the rack.

A correspondent writing in the 'North British Agriculturist' in October 1896 states:—

"I have had a rack (erected at my own expense) for five years.

"*Drawbacks.*—The greatest drawback to the Richmond rack is undoubtedly its initial cost.

"Mine, which is 65 yards long, cost in the first instance £43, to which has to be added Mr Richmond's patent fee (varying from £2, 2s. up to £5, 5s.), and the work of my own men levelling the ground. It holds fifty-two cart-loads, or thirteen stacks more or less, according to the length of the sheaves and the tightness with which it is packed.

"In emptying the rack into stacks for refilling, it must be borne in mind that you cannot turn over grain in *rattling* order without a certain percentage of loss. However, though I spread out sheets to save this, I found there was too little to repay the trouble, and now the hens fall heir to anything which does fall out.

"*Advantages.*—In the course of a harvest one can easily fill it twice, but things must be in a bad way if stooks stand out long enough to fill it much oftener. It will not work miracles, and if the grain is put in wet it will not dry unless there is drought; but it will not heat, and the grain is all safe.

"The great beauty of the dryer is, that you can put in it grassy-bottomed grain, or from the sides of dykes, plantations, or other sheltered places, and it becomes the best stuff you have.

"It is also true that the rack-dried grain fetches considerably more money than that from stacks.

"The saving of bosses, props, thatch, and ropes should also be placed to the credit side of the account.

"To sum up advantages and drawbacks all put together, I would not like now to farm without one. Were I offering for another farm, more especially if it were somewhat late or sheltered, I should make the erection of a Richmond rack a condition *sine qua non.*

"In my opinion, taking one year with another, it would not be advisable to erect one to hold more than can be threshed by the end of January, because after that the straw becomes so brittle by being too dry, and gets smashed up in threshing."

The writer received the following letter from Mr J. G. Cunningham, corn merchant, Burntisland, one of the most extensive grain buyers attending Perth and Fife markets:—

"With reference to your inquiry as to my experience of the Richmond drying-rack, I may say generally that I consider it to be, especially on late farms, or on farms surrounded by trees, *invaluable.*

"I have bought barley during the past winter months, threshed out of the rack in prime condition and colour, 56 lb. per bushel, at the highest prices then going for fine Chevalier barley. This barley was cut the one day, led into the rack the next, and came out in winter in this prime condition. Between rack and stack on the same farm there is generally a difference on early farms of 1½ lb. per bushel in weight, and on late farms of 2 lb. per bushel in favour of the rack."

Mr Hamilton, tenant of Colliston, a late farm in Kinross-shire, writes as follows:—

"My experience of the Richmond rack is that it saves both in time and money.

"You can fill the rack when too wet for stacking. I have led barley in good order from the same field—part with the rack and part with the stack—and when threshed found the grain from the rack to be nearly 2 lb. per bushel heavier, and a better colour."

Much additional evidence could be given in favour of the advantages of the rack, but surely sufficient has been quoted to convince even the most sceptical that it is at least worthy of consideration.

Cost of the Rack.

A rack of 100 yards long and 16 feet high can be erected at a cost of £58, including labour, but exclusive of patent fee, which runs from £2, 2s. to £5, 5s. for each farm. This outlay, as has already been pointed out by one of the correspondents, has up till last year considerably militated against the erection of many racks, but now the difficulty has to a large extent been lessened.

Last year the writer succeeded in getting Mr Walter Thorburn, M.P., interested in the Richmond rack, and he visited Mr Richmond and had the erecting and working thoroughly explained. Mr Thorburn at once put himself in communication with Sir Jacob Wilson, practical adviser to the Board of Agriculture, and, after one or two interviews, the Board of Agriculture issued an order putting the Richmond rack in the same category with other permanent improvements on which the Government lend money. The result is that now any proprietor can obtain from Government the full sum necessary for erecting a rack, or racks, on the usual conditions that principal and interest are repaid in twenty-five years.

It is now found, therefore, that a rack 100 yards long, costing £58, would entail a yearly payment of about £3, 12s. 6d. for twenty-five years. Surely no farmer would grudge to pay this sum to his landlord every year in order to secure such a boon!

This paper may be fitly closed by reproducing a letter from the pen of the inventor, Mr Richmond:—

"Grain will remain *safely* in the rack till dry, whether put in when newly cut or when wet.

"The heads of the sheaves dry very quickly although *dripping* wet, as they hang loosely down in the middle of the rack. The degree of wetness in the heads makes little difference as to time of drying the grain; the time the straw takes to dry depends on the weather. The rack can be filled when no other harvest work is possible. The grain can remain in the rack till threshed unless the rack is required for refilling, when it can be either threshed or stalked.

"The rack can either be used as a grain dryer or as a shed in which to build dry sheaves.

"As the shed is long and narrow, it is more suitable than a short broad one for keeping crop, on the principle that small stacks are better than large ones.

"The most convenient method is to erect racks to hold one-half of the crop. If two racks are required to hold half the crop, keep one of them always as a rack and the other as a shed, except when it is required in a bad harvest. The shed can be converted into a rack in a day, if the wires are ready to put on.

"The wires being attached to the strainers by hooks, are thus easily put on or taken off. The *shed* ought to have strainers also in the middle of the erection.

"This allows the *shed* to be wholly used as a *shed,* or half as a shed, the other half as a rack.

"If this is not done, the weather might break when a small portion of the *shed* was filled, thus preventing the rest of the shed being used as a rack.

"The rack used as a shed will hold between four and five times more than a rack, or between rack and shed all the grain can be housed in a good harvest, whilst in a bad harvest both erections can be used as racks.

"The annual interest on Government money for two racks of, say, 130 yards long each, will be about £10, and the rack and shed will hold in continuation 120 acres of an average crop.

"An average crop per acre is supposed to be 800 sheaves of 8 inches in diameter, but the following information will enable farmers to calculate how many acres of their own average crop a rack will hold. Take a rack 130 yards long. There are 44 wires or spaces in the rack; reduce the 130 yards to inches; multiply the result by 44, and then divide by 8 (the supposed diameter of a sheaf). The answer will be 25,740 sheaves.

"More sheaves can be put in if squeezed firmly together, which they ought to be. A continuous long rack is better than two or more racks if built parallel to each other, as the parallel ones shelter each other.

"Long racks are cheaper per yard in proportion to short ones, as the latter require the same number of straining-posts, stays, ratchets, and hooks."

POULTRY ON THE FARM.

By EDWARD BROWN, F.L.S., Lecturer on Aviculture at the Edinburgh University, Reading College, to the Berwickshire and other County Councils, &c., &c.

IT is, fortunately, unnecessary at the present time to advocate the desirability of our farmers giving greater attention to poultry-keeping. In many parts of the country there are those still left who retain the old notion that fowls are beneath notice. But stern facts have had a potent influence in changing ideas of this kind. When once it is realised that, as was the case during 1895, the value of poultry and eggs produced in Britain was of greater value than our crops of wheat, it does not take long for the mind to change its purview. Only by comparisons of this kind can things assume their relative positions. I do not propose, therefore, to occupy any space in discussing whether poultry are or are not profitable members of the farm stock, more than to ask what would be the result if other branches had been dealt with in like fashion?

Causes of Failure.

Is it too much to say that upon many farms the want of system has been only too apparent? Breeds of various kinds have been mixed up without any regard being paid to their influence one upon the other as to economic qualities. Far too many have been kept, and hens allowed to live years after they could be profitable. The housing in numberless cases is most faulty, and does not conduce in the least to winter egg-production. Instead of hatching early to secure early chickens and autumn-laying pullets, the hens are pretty much left to themselves. And the system of feeding is as bad as bad could be, generally erring on the side of too much rather than too little food. Old and young stock are allowed to run together—a serious mistake, as will afterwards be shown. And instead of marketing the surplus chickens and older hens, say, in July, when prices are good, they are kept until the game is in, when, with increased supplies and reduced demand, a glut takes place. In short, every principle which makes for success in dealing with larger stock has been violated. We only ask that what has proved so successful with cattle and sheep shall be applied to poultry. Nothing more, but certainly nothing less. It is necessary in every pursuit to aim for the maximum of returns at the minimum of cost, and until this is done with poultry-keeping we cannot look for good results. The method of regarding poultry as a perquisite of the women-folk has not tended, in many cases, to saving of expense. Securing the food free, they have less object in reducing the quantity used.

Poultry Abroad.

It is a common impression that one reason why foreign producers can send such vast quantities of eggs and poultry to Britain every year (in 1896 the total was £4,790,025) is that they have so much better a climate. We are always apt to exalt the opportunities of other folk, and this is but one of many examples of the tendency. Those who have travelled abroad know that this notion is absolutely erroneous. For eggs and poultry we require a moist climate. Excepting north-western France and Denmark, none of the countries whence our chief supplies are obtained come under this category, and it is not too much to say that, so far as climate is concerned, we have a decided advantage over any of our rivals. What is true of beef and mutton is equally so of poultry produce. And as to temperature, I do not know that even Scotland compares unfavourably with France during the winter season. Those who have experienced an east wind in the last-named country know that our north-easters are kindly in comparison. In summer we have a decided advantage. Better by far our temperate summers than the scorching glare of the south. The blame rests upon the man, and not his conditions.

A leading Idea.

First and foremost, the poultry-keeper, be he farmer or cottager, ought to have a definite idea in his mind. That he cannot do everything at one time goes without saying. Attempting to do so means failure. He must either go in for egg-production as a leading thing, or for table poultry. Of course, where eggs sell best there will be surplus birds to dispose of and *vice versa*, but still the profit will be chiefly secured by the one thing. All over Scotland eggs are in constant demand, in spite of Irish and Danish supplies, and good prices are realised in winter. But there is an increasing inquiry for table poultry. I see no reason why the south-west of Scotland should not be as famous for its chickens as for its dairying; and there are many other parts, notably on the Banff and Aberdeen border, the West Lothians, Tweeddale, &c., where this industry could be carried out successfully. But eggs have a certain sale, and returns are more rapid in that direction. My point, however, is that, instead of attempting everything at one time, there should be a leading idea in the mind. This will materially help in determining what kind of fowls shall be kept.

Classification of Breeds.

It is of material assistance to us in suggesting what breeds are most suitable for farmers, if we recognise the necessity of classifying them in accordance with their economic qualities. Here, again, we are only following the lines adopted in larger stock. For practical purposes the colour of plumage does not really matter to us. It is only of value as a mark of purity, and this, with other more or less artificial points, should simply be regarded as the sign-manuals indicating breed and race. Without them we should be hopelessly at sea, and they cannot be ignored. But we require most of all to know whether a breed is good as an egg-producer, or whether it excels in meat qualities. To this end below are given the leading varieties of poultry, classified according to their economic properties, and which is quoted from one of my works.[1]

Laying (or non-sitting) Varieties.

Hamburghs.
Minorcas.
Leghorns.
Scotch greys.
Redcaps.
Andalusians.
Houdans.

Table Varieties.

Dorkings.
Indian Game.
Game.
La Bresse.
La Flèche.
Crèvecœur.

General Purpose Varieties.

Plymouth Rocks.
Wyandottes.
Brahmas.
Langshans.
Orpingtons.

These are the leading economic breeds, and I have excluded from the list those which are merely ornamental. In addition we have waterfowl and turkeys, which may be treated in the same manner.

Ducks.

Rouen.
Aylesbury.
Cayuga.
Pekin.
Indian Runners.

Geese.

Embden.
Toulouse.

Turkeys.

Bronze American.
Black Norfolk.
Cambridge Bronze.
White.

From these we have abundance of choice, really an *embarras des richesses.* In this connection, however, it is most important that we should consider the conditions prevailing before making our choice. In North Britain a quick-growing breed is essential. The one disadvantage which poultry-keepers north of the Cheviots have to contend against, though this is less apparent in the south-western counties, is that the spring is later than farther south. Hence slow-developing breeds ought to be abjured.

Breeds for North Britain.

Bearing this fact in mind, the following races of poultry may be recommended as the best for northern farmers:—

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[1] Poultry-Keeping as an Industry for Farmers and Cottagers. By Edward Brown, F.L.S. London: Edward Arnold.

Non-sitting Breeds.—Leghorn, Redcap, Houdan, Scotch grey.
Table Varieties.—Dorking, Indian Game, Old-fashioned Game.
General Purpose Breeds.—Plymouth Rock, Wyandotte.
Ducks.—Aylesbury, Pekin, Indian Runners.
Geese.—Embden, Toulouse.
Turkeys.—Bronze American, Cambridge Bronze.

Admirers of varieties which have been omitted from the above list may think that injustice has been done to their favourites; but as everything must be measured by comparison, the above may be taken as correct, and that some good reason can be given for such omissions. As a case in point, the black Hamburgh is hardy, vigorous, a quick grower, and a wonderful layer; but its eggs are much too small for trade purposes, and I am reluctantly compelled to leave it out on that account. There is only one modification to make—namely, that in the south-western counties the Minorca answers very well indeed, but it is certainly not to be recommended for the northern and eastern counties of Scotland.

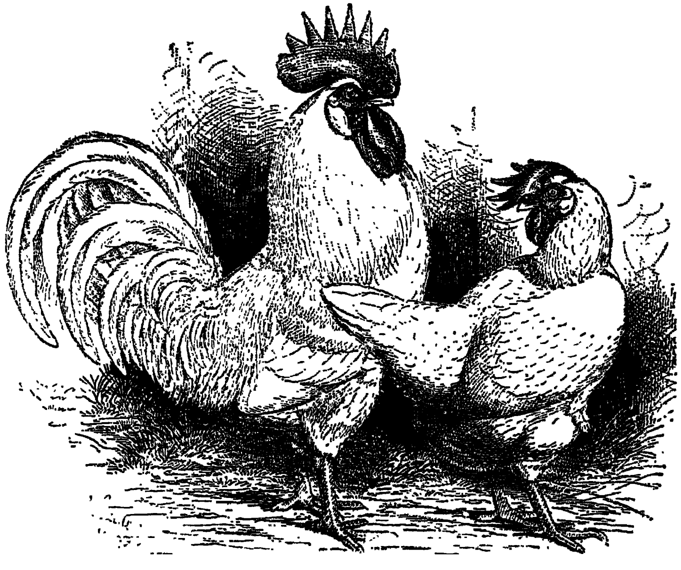


Fig. 23.—*White Leghorns.*

The space allocated to this article does not permit of descriptions being given of the various races of poultry named above. But these can be obtained elsewhere. The illustrations here printed show the general character of some of the breeds, and they must suffice for the present. Let me here urge the importance of using pure races as a basis for the stock. Scottish farmers would never have attained the position they occupy as stock-breeders and raisers if they had ignored racial character in their cattle and sheep. We again ask them to apply the same principle to their poultry. Mongrelism never succeeds, and yet the majority of farm poultry are unmitigated mongrels.

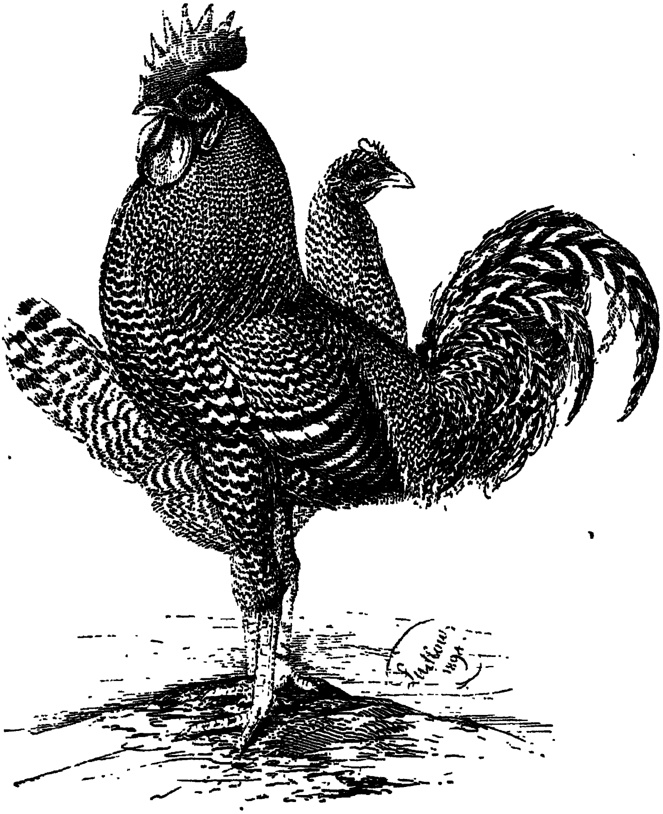


Fig. 24.—*Scotch Greys.*

Cross-Breeds.

Cross-breeding is desirable, but must be upon systematic lines. The best crosses I know are as follows:—

For all-round fowls: White Leghorn and Plymouth Rock.
For table fowls: Indian Game and Dorking.
For early ducklings: Aylesbury and Pekin.

Sometimes it is objected that to cross between pure breeds necessitates either the maintenance of two separate pens of the respective varieties or buying fresh birds every year. This is not so, however. It is only necessary to purchase a pure male bird annually.

How to keep a First Cross.

For instance, suppose we take the first cross recommended. Commencing with a white Leghorn cock and Plymouth Rock hens, the progeny will be half-breds. The next year the pullets should be mated to a pure Rock cock, and then we shall have birds three-quarters Plymouth Rock and one-quarter white Leghorn. In their turn they should be mated with a pure Leghorn, thus bringing them back to exactly half-breds again. So the business should continue, alternating the breed, in so far as the male bird is concerned, regularly and systematically. This plan maintains the cross-bred type, with all its advantages, at the very minimum of cost.

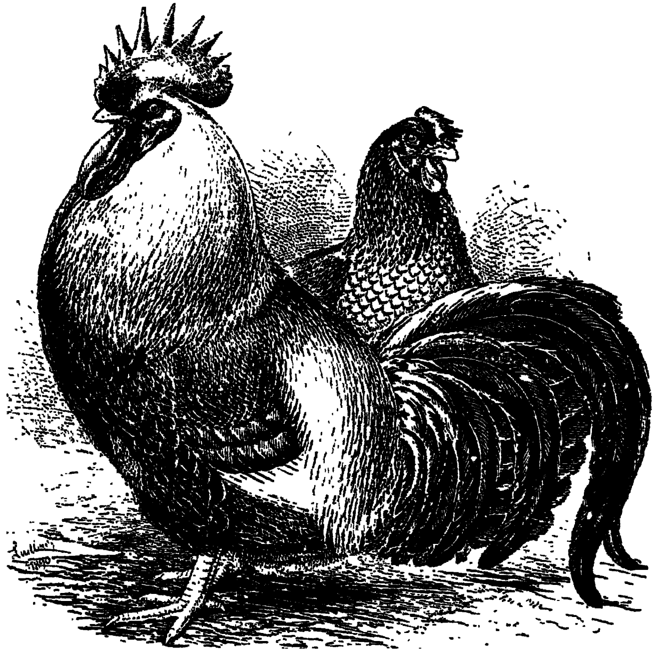


Fig. 25.—*Coloured Dorkings.*

Separate Pens in Breeding Season.

The plan commonly followed by farmers, not only in Scotland but elsewhere, is to allow all the birds to run together, keeping enough male birds to ensure fertility of eggs. This is a serious mistake, in that it retards improvement, preventing that selection which ought ever to be kept in view by the stockbreeder, and entails considerable waste in the maintenance of useless birds. A better plan is to select the best birds as breeders, place them out in a separate house, say one of the portable structures to be afterwards described, and if they are separated in this way, each flock having its own male bird, they will not mix. From a cock and eight to ten hens enough eggs should be obtained in three months to produce 100 to 150 chickens. When the breeding season is over, all the adult fowls can be mixed together, as the arrangement is merely a temporary one. In no other way can breeding be regulated, but the very simplicity of this method ought to ensure its universal adoption.

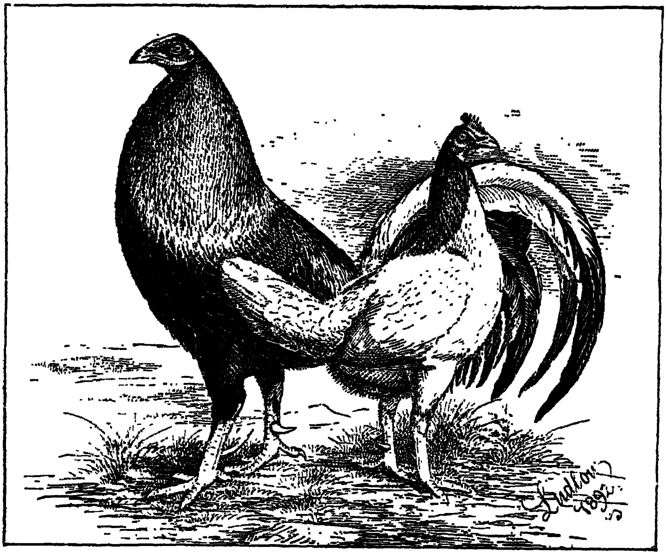


Fig. 26.—*Old English Game.*

Age of Stock.

In order to secure vigorous chickens and plenty of eggs, we must depend upon young birds. I have been upon Scottish farms where many of the hens were from three to five years old, and there was small need to wonder why the eggs produced were so few in relation to the number of fowls kept. The poultry-keeper for profit ought to lay down as a maxim that "no hen kept as an egg-producer ought to be allowed to live after she is twenty-seven months old"—that is, she should be killed before she goes into her second moult. If of a sitting variety, these hens can be sold, when broody, to game-raisers at a fair price. But in any case they should be got rid of. If bred in March or April, the limit of their usefulness in relation to cost of feeding will be two years the following June or July. When systematised this arrangement can be very easily carried out, and the birds can be discerned if they are marked by means of india-rubber or copper rings, which are sold at reasonable prices. To explain the method, supposing all the pullets hatched in 1897 are ringed on the right leg, and those in 1898 on the left leg, in 1899 every hen with the former ring should be killed off at the time already named, and the pullets bred in that year will take their place, they being marked in the same manner. Such a method involves small trouble and cost, whilst it facilitates labour and is simplicity itself.

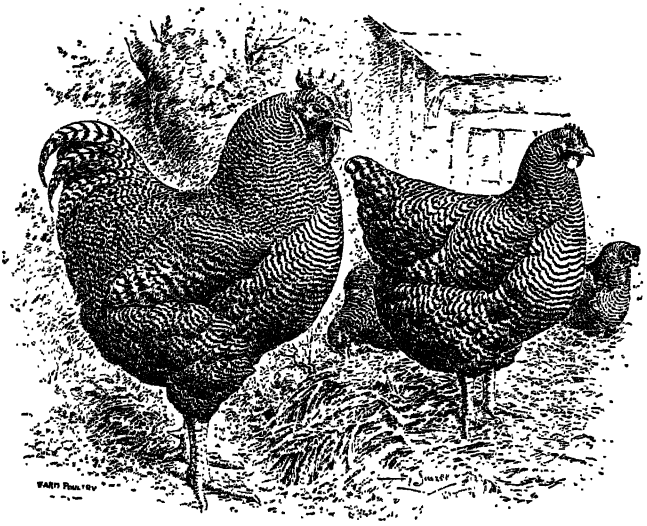


Fig. 27.—*Plymouth Rocks* (from 'Farm Poultry').

Houses and Housing.

In a country where covered yards for stock have become so universal, very little need be said as to the importance of properly housing our poultry. That fowls can be kept healthily under what are sometimes termed "natural conditions" is undoubted, but such a practice sacrifices all that has been achieved by domestication. We know what the result would be if milch cows were allowed to remain on the pastures during the winter. So with poultry. Eggs are to a large extent dependent upon external conditions. And it is at night when that heat force which influences their production is chiefly eliminated. The birds can keep themselves warm during the day by exercise,—not so when they are at rest. Consequently a good house is of supreme importance, and without it we cannot expect many eggs at a time of year when they are highest in price. In most parts of Scotland every egg produced from October to February is worth three times as much as during the spring and summer. We may, therefore, accept it as an absolute necessity that the birds shall have a good, comfortable house in which to roost.

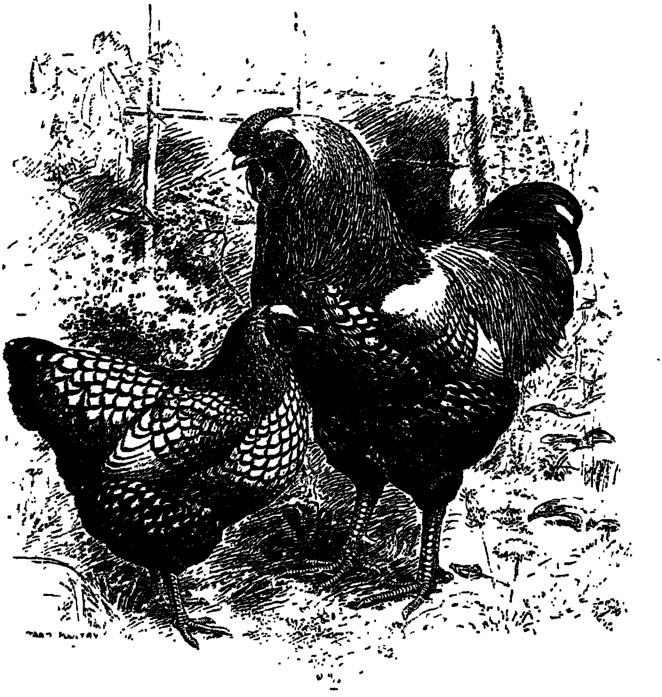


Fig. 28.—*Silver Wyandottes* (from 'Farm Poultry').

Permanent Buildings.

That feature which is so strikingly characteristic of Scottish farms—namely, the substantial character of the buildings—ought to conduce to success in poultry-keeping, and will do so whenever they are of the right kind. Permanent stone structures are to be found everywhere, and when one of these, adjoining stables, cow-byres, &c., is given to the fowls, they have a measure of protection which is very helpful. But the principles which must here be laid down as to poultry-houses need to be carefully observed. First, dryness, for damp in walls or floor is fatal to success. Second, ventilation, which should be sufficient to secure a supply of fresh air, yet no draught. This can only be done if the openings are above the level of the perches, and in winter they may be nearly closed. Third, floors: cement is often used in these permanent poultry-houses, but unless covered with some dry, warm material, this makes the house very cold, and thus more than destroys its good qualities. The floor should be thickly covered with peat-moss litter—a most valuable thing, as it is dry, warm, a deodoriser, and an absorbent. If raked over daily and dug over once a-week,

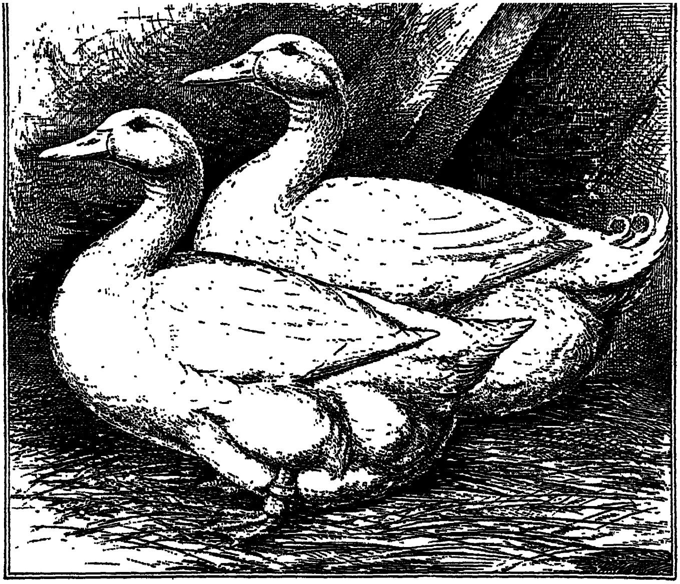


Fig. 29.—*Aylesbury Ducks.*

a bed of litter 6 inches thick will serve for months, and then be splendid manure, by reason of the ammonia held in suspension. Its renewal will only be necessary when an ammoniacal smell is apparent. Fourth, perches should always be on a level, and never more than 2 feet above the ground. Fifth, nests should be so arranged that they can be easily cleaned, otherwise they become harbourages for vermin. Cleanliness is, of course, a most important point, and has more influence than is commonly supposed on the bird's health and wellbeing.

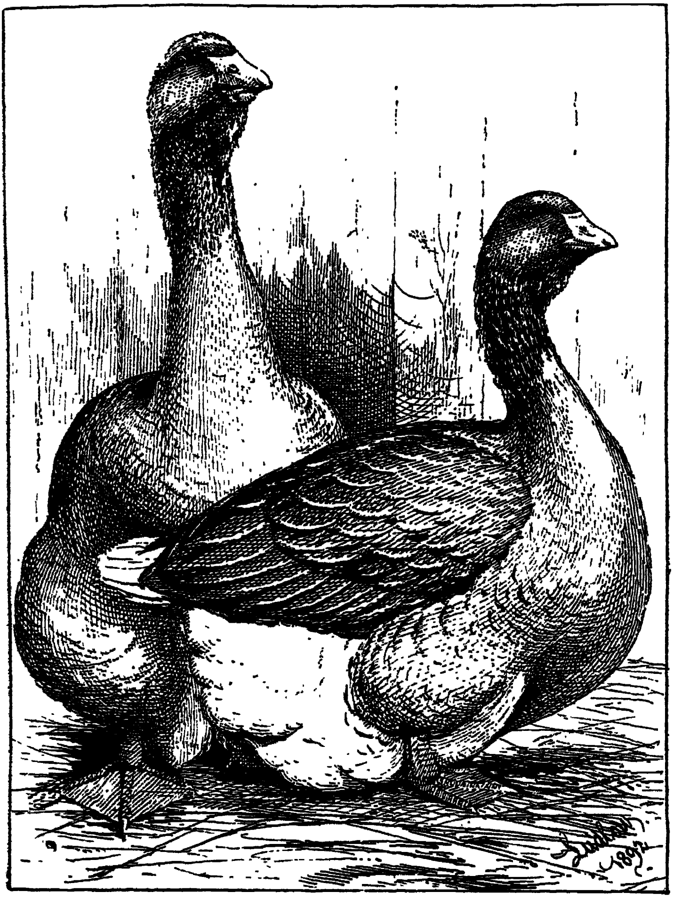


Fig. 30.—*Toulouse Geese.*

Wooden Houses.

Where wooden houses are employed, it is important that the timber should be of sufficient thickness and the material good. A few shillings saved for the sake of cheapness will soon be lost in another way. The boards should not be less than an inch in thickness, and are better tongued, so that they may fit closely together. In a cold, exposed situation, a preferable plan, if the house is a permanent one, is to use five-eighths or three-quarter inch deals and double, with an air space of 2 or 3 inches between, as this makes one of the warmest wooden houses I know. Or the inside can be lined with Willesden paper, an excellent non-conductor. The outside should be well tarred or felted. Wood is not so good a material as stone, but it is cheap and portable, and the suggestions here made will go far

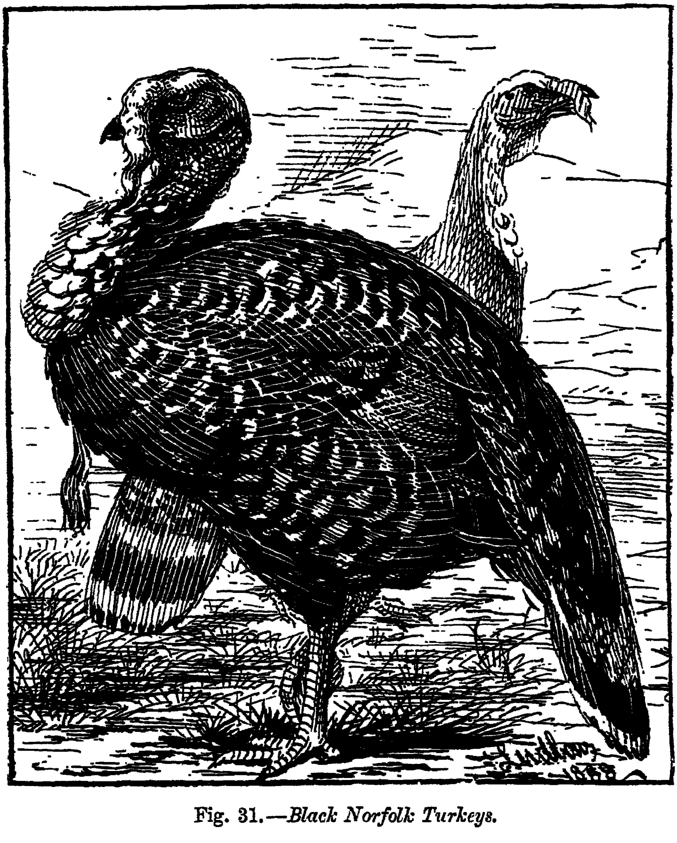


Fig. 31.—*Black Norfolk Turkeys.*

to make it acceptable. Fig. 32 gives a representation of a permanent wooden house, made to the writer's own designs, and in front it will be seen that a lower shed is attached. This is a most desirable thing, for the birds here find that protection they need, and it makes the house much warmer. On farms, however, there are usually plenty of places where they can go in bad weather. It will also be seen that there is more light given than is usually the case. A mistake is frequently made in having poultry-houses dark. Light is always beneficial, and especially sunlight, as it is a great purifier, and a house so lighted is much warmer than one that is dark. In fig. 33 is given a good type of movable house, easily changed from one place to another as circumstances may require.

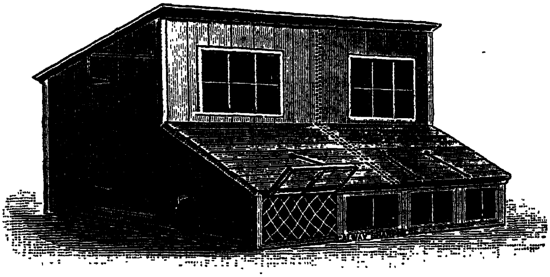


Fig. 32.—"*Velmead*" *Poultry-House.*

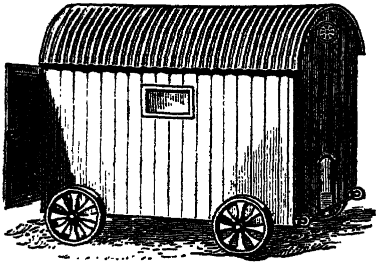


Fig. 33.—*Portable Farm Poultry-House* (Spratt's Patent).

Hatching.

We need only mention a few of the general principles to be observed in connection with hatching. The first thing is to breed the pullets early, so that they may begin laying in good time; for the later they are in commencing egg-production, the longer will it be ere broody hens are available. But as good housing and feeding have a most potent influence in stimulating the egg-organs, these have a relative importance in this business. April and May hatched pullets, however they may be treated, cannot be relied upon for nearly twelve months, whilst those brought out in February and March will frequently come into use from September to November. It is well to remember that a hen kept warm usually wants to sit sooner than another subjected to harder conditions. And to maintain the brooding instinct, when once commenced, warmth is most necessary. To this end the nests should be made where a moderate temperature can be maintained, otherwise in cold weather there is great danger of egg-desertion, and all its consequent disappointments. Every sitter should be isolated. Nests should not be made in the fowl-house, or any place to which the other birds have access. Absolute cleanliness must be observed, and in order to facilitate the same, the separate nest-boxes often recommended are to be preferred, as they can be removed and the bed remade after each hen has finished her term.

Artificial Methods of Hatching.

But the poultry-breeder who desires to take time by the forelock must not be content with the natural method of hatching. Hens are, to say the least, very uncertain creatures, and frequently fail to do that which has been planned for months ahead. We can only influence, and our influence is frequently in vain. Moreover, a hard or a mild winter makes all the difference when hens become broody. And unless some frequent-sitting variety, such as the Cochin, is kept for the purpose, which is an expensive method, all our calculations as to early chickens may be upset. It is necessary, also, to bear in mind that every hen has to lay a number of eggs before she shows any desire to sit, and these eggs may be worth much more as potential chickens than for eating purposes. And where eggs are the chief desiderata, especially if non-sitting fowls are kept, these latter are useless in the direction indicated. The facts explain why artificial incubators have become so largely employed. Given a good machine, incubators are as reliable as hens, and often more so. The best is undoubtedly the Hearson, which combines almost perfect regulation with excellent arrangements for moisture and fresh air. A good incubator requires very little attention, and can be depended upon to hatch a large percentage of fertile eggs at any season of the year. It is sometimes thought that chickens cannot be as good hatched in this way as those brought out by hens. But when we remember that after an egg is laid the mother has simply to give it the necessary heat, to see that it is in a suitable place, and to turn it every day, these can be accomplished as well without her aid as with it. In practice it is found that artificially hatched chickens are just as hardy as those produced in the ordinary manner. Believing as I do that the future of poultry-keeping depends largely upon the adoption of artificial systems of hatching and rearing, it is desirable to press this point upon the attention of readers. But the hens should not be discarded. Let them be used for sitting also as they become broody. Only it will not do to depend upon the latter, at any rate if the time of hatching is to be under our control. The best place for an incubator is a cool cellar, but it must not be close or badly ventilated.

Chicken-rearing.

With regard to rearing, if it is intended to bring out early broods of chickens, either to supply the spring markets for poultry or to secure winter eggs, a good chicken-house is most desirable. Such a building as the Velmead poultry-house, already illustrated, but upon a somewhat larger scale, is excellent for this purpose. By opening the lower windows the chickens can have plenty of fresh air, and they do not need to come outside at all during unfavourable weather. On many farms unused barns are frequently at hand, which at a moderate expense can be made suitable for early rearing. But they must be light and airy. Windows inserted on the south or south-east side will not only give light, but make the place warmer. We must not expect chickens to thrive where it is dark, and, as already suggested, sunlight is a great purifier. Under such conditions several lots can be placed together, the chickens being allowed to run about where they like, but each hen kept to her own coop. The floor, however, must not be brick or cement. Dry earth is the best of all. Failing that, dry sand may be employed.

Coops.

Of course such an arrangement is only required during the colder months. At other seasons coops out in the open will give the best results. In the North a double coop with covered run is better than the ordinary type, as the solid back, top, and ends afford shelter when required. It is for this reason that the newer form of brooders, such as the Hearson, Westmeria, &c., are found so satisfactory. The points to be observed in chicken-rearing are—perfect protection, yet plenty of fresh air, removal of the coops to fresh ground every day, cleanliness, and as much shelter as can be obtained without coddling, which is a grievous mistake.

Methods of Feeding.

A system may be as near perfect as is humanly possible, and yet if it fails in one point full success can never be achieved. The strength of a chain is determined by its weakest link. More poultry-keepers fail by bad methods of feeding than from any other cause. As before remarked, frequently too much food is given; and for every fowl dying of starvation a hundred succumb to over-feeding. The plan of throwing food down upon the ground is in itself wasteful. There is no means of judging how much the birds really require, and it is impossible to adopt any system of rations; for much depends upon the breed, the season of year, and the amount of natural food available. It is not too much to say that during a portion of the year upon farms fowls can obtain the greater part of their food. Upon ploughed land especially, and where it is so highly cultivated as in many parts of Scotland, the amount of natural food to be obtained is much greater than is often thought. I know that if large numbers of fowls were allowed to run over growing grain or roots they might do harm, but it would not be so great as often stated, if they are properly fed morning and night. Such harm will be more in the direction of trampling down young shoots than of actual eating. What the birds seek for are worms, grubs, insects, &c.; and the small injury is far more than compensated by the destruction of those forms of life, some of which are a great source of trouble to the cultivator. Fowls help to maintain that balance of Nature which high farming is calculated to upset. On pasture-lands there is no difficulty whatever, and poultry-keeping means adding another crop without displacement of anything else. There is one more danger present when food is thrown down, namely, that if any of it lies there for a time it may become contaminated by microbes, and disease is often caused in this way.

Food-Troughs.

Consequently troughs should be employed for feeding poultry. Nothing can be better than those used for sheep, except that they should hardly be so wide and deep. If provided with a bar above, the birds cannot get inside, as otherwise they are apt to do. The points to be observed are that enough troughs shall be used so that all the birds may be feeding at the same time, that any food left shall be removed, and that the troughs be kept clean.

Food.

As food there is nothing equal to good Scotch oats. Analysis shows that this grain comes more nearly to being a perfect food for poultry, considering to what purpose it is put, than any other. Of course oats are hardly so sweet as maize or wheat, and consequently fowls will eat these first if all are put down together. But this is a small matter, and does not affect the value. The staple foods should be oats, wheat, and barley, with a small proportion of maize in winter, say one-fourth or one-fifth. The true method of feeding is to give soft food (crowdy), made crumbly—moist and hot—in the morning, and hard corn at night. If meal is not available, oats or wheat may be steeped in hot water and given whilst warm. A warm feed on a cold or raw morning has just that beneficial effect on fowls that a cup of hot coffee has upon their owners. If roots or small potatoes are boiled and mixed with the soft food, they are a decided improvement. Fowls at liberty during the greater part of the year should only be fed twice a-day—early in the morning and about an hour before they go to roost at night.

Table Poultry.

The question of table poultry is of too great importance to be dismissed in a paragraph or two. But for the present we must be content to deal with it thus cursorily. Observations in various parts of Scotland have shown that the feeding up of poultry

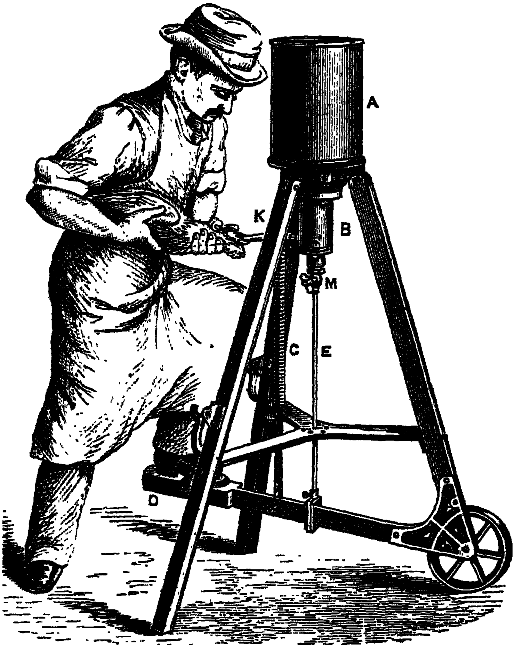


Fig. 34.—*Hearson's Cramming Machine.*

is practically unknown, and that the most possible is not made out of this industry. It is only necessary to ask, Where would Scotch cattle be on our great markets if the animals were sent forward in a lean condition? Yet this is the rule with fowls. Again we ask that the same principles shall be applied to the smaller as to the larger stock. By a proper system of fattening, from 2 to 3 lb. can be added to the weight of an ordinary fowl in three weeks, and at a cost of about 8d. This gain is largely flesh, and it must at once be evident that a fowl so fed is of greater value as food, apart from the better quality of the flesh, which is a most important consideration, than in the original state. The system here advocated is carried out extensively in the south-eastern districts of England and upon the Continent, and explains why the finest qualities of table poultry produced in Britain emanate from London, the Metropolis being the medium through which the fatteners of Sussex and West Kent market their produce. Fattening can be carried out in Scotland, and the starting of establishments at which the process is completed would soon advance the table poultry of North Britain to a much higher plane than it now occupies. The initial expense is comparatively small. Cages in which the birds are kept cost very little, and they can be accommodated in sheds either now unused or inexpensive to erect. The crammers cost £4, 10s. each: that shown in fig. 34 is sold by Charles Hearson & Co. at the price named. One of these machines will suffice for a large establishment, and will last for years.

Marketing the Produce.

A few words upon the subject of marketing must content us. At present the trade is not organised at all, and for that reason foreign producers have a great advantage over our own people. To secure the best prices, eggs should be sold when at their best condition. No egg more than three days old ought ever to be sold as "fresh" or "new-laid." It is not so when beyond the age named. In order to do this, the foreign method of collecting should be introduced, and all eggs should be graded in accordance with their size. Many instances could be given showing that where the trade is organised good prices are obtained for eggs; but traders cannot be blamed for preferring foreign eggs, which come regularly and in good order. The special points to be observed in connection with eggs are—(1) winter eggs, which can be obtained in Scotland by early breeding and proper housing; (2) larger size and greater evenness; (3) clean shells; (4) sweet packing; (5) rapid marketing; (6) opening out of new connections.

And in table poultry, not only is it necessary that the fowls should be properly fatted, but also that they be marketed when prices rule highest. This is true of chickens and ducklings, which often are not sold until the time of year when rates are low, because of limited demand. The best way to improve our table poultry is—(1) right breeds for flesh production; (2) early and late hatching; (3) proper fattening and shaping; (4) neat plucking and packing. It is important to bear in mind that fatted fowls should always be killed where they are fatted.

THE PINE GEOMETER MOTH (*FIDONIA PINIARIA* TR.)

By R. Stewart MacDougall, M.A., B.Sc.

During the spring and summer of 1895, through the kind offices of Professor Pauly, the well-known Bavarian entomologist, I had very favourable opportunities in the extensive pine-forests near Nürnberg of studying the terrible ravages of the Pine Looper or Pine Geometer moth, whose caterpillars, by defoliating the trees, caused the death and necessitated the felling of millions of Scots pine (*Pinus sylvestris*).

Apart from the interest always attending a plague of insects, I am encouraged to give a review of the devastation, with an account of my observations and inquiries on the life-history of the attacking insect, partly because, although *Fidonia piniaria* is a common enough species in Great Britain, we possess no full account of the species on its economic side; and also because a number of new facts in the biology of Fidonia have come to light in the course of this latest attack.

Of the insect ravages which have at different times entailed much loss throughout Europe, the State of Bavaria has had more than her share. It is only five years ago since the attack of the caterpillars of the Nun moth (*Liparis monacha*) on spruce (*Picea excelsa*) cost Bavaria £100,000, and now again thousands of pounds will be lost in this latest attack on pine. The Nürnberg Royal Forest has an area of some 60,000 acres, and of this, by the end of 1894, one-third had been defoliated. The damage is really greater than one-third of the area, for no trees are included in the return unless they have lost over 75 per cent of their needles.

Position of the Pest in the Insect World.[1]

The Pine-Looper moth belongs to the Geometridæ, a family of moths containing in it such other well-known and troublesome moths as the Winter moth (*Cheimatobia brumata* Stph.), the Mottled umber (*Hibernia defoliaria* Latr.), the March moth (*Anisopteryx æscularia* Stph.), and the Magpie moth (*Abraxas grossulariata* Leach).

Characteristics of the Geometridæ.

Antennæ are bristle-shaped, or in the case of the males of several species pectinate or *combed*. The proboscis is weakly developed, and ocelli are absent. Bodies slim, legs slender. In proportion to the size of the body the wings are large. Most of the species when quiescent rest with their wings flat, but some—and our pest Fidonia is among them—rest with their wings raised and their bodies exposed, like the butterflies. Fore- and hind-wings resemble one another in colour, and seldom are the colours striking. In the case of the females of a certain number of species, wings are absent or rudimentary —*e.g.*, in the Winter moth, the Mottled Umber, and the March moth. The eggs are generally round, and may be smooth or ribbed.

The family name "Geometers" takes its origin from the "looping" or "spanning" method of progression so characteristic of the caterpillars. Of the twelve rings which follow the head of the caterpillar, the first three each possess a pair of feet, the so-called thoracic feet. Ring 9 and ring 12 each carry a pair of after-feet, called the sucker-feet. A few forms have also a pair of feet on ring 8. The 10- or 12-footed caterpillars are known as Loopers, and move thus: the caterpillar holds firmly with its thoracic feet, and loosening the grip of its sucker-feet, it brings these forward close to the thoracic ones. The result is the formation of a loop. Then the thoracic feet let go their hold and the body is stretched out preparatory to taking another grip. By successive looping the caterpillars can move very rapidly. The caterpillars when resting may be found holding firmly on to a branch with their after-feet, the rest of their bodies held slanting in the air, and resembling dried twigs from their colour harmonising so well with their surroundings.

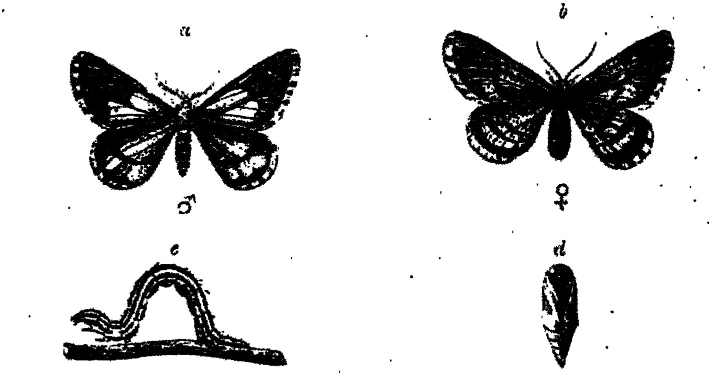
If disturbed, the caterpillars of some of the species have the power of letting themselves hang downwards by spun threads. The pupæ, which are pointed at the hinder end and generally brownish in colour, are usually found in or on the ground below their food-plants, not enveloped in a cocoon.

The moths are chiefly found flying in the summer months, but a varying number of species fly in spring, in late autumn, and even in winter. In most the generation is annual, but some have a double generation.

The Geometridæ give little trouble to the agriculturist, but the family contains forms very troublesome to the gardener, the fruit-grower, and the forester. The "Loopers" eat the leafage of their host-plants. Deciduous broad-leaved trees claim the attention of the largest number of the species. Coniferous trees also are attacked, and in a few cases the caterpillars feed on seed or bud or catkin.

Description of Fidonia piniaria.

The moth, known also as *Geometra piniaria* L., or *Bupalus piniaria* Leach, measures from an inch to an inch and a half in spread of wing, and up to a little over half an inch in length. There is a marked difference in colour between the two sexes (fig. 35).



Bupalus piniarius, L. (*Natural size.*)
a Male. *b* Female. *c* Caterpillar. *d* Pupa.

Fig. 35.—*Stages in life-history of Fidonia.*

Male.

The ground-colour of the wings is white or yellowish-white; but this colour is replaced at the apex of the fore-wings by a large triangular black or brown-black patch, and as both pairs of wings are also blackish all round the margin, the male moth may be described as blackish or brownish, with light spaces. The fringes of the wings are alternately light and dark. The hind-wings have two transverse dark lines. The underside of the wings is reddish-brown in colour, with dark transverse lines and many spots. Springing from the insertion of the hind pair, and running out to the edge, are three ray-like white lines, of which the middle one is the broadest. The dark antennæ are "double-combed." The thorax and abdomen are marbled brown and white.

Female.

Both fore- and hind-wings are rusty-brown with pale edges. There are faint dark transverse lines on both pairs. The underside resembles that of the male, although here, too, the dark transverse lines may be fainter. The yellowish antennæ are bristle-shaped. The body is stouter than in the male.

Examination of many specimens showed slight variations in colour. In the males, for example, many of my specimens had the pale markings of the wings perfectly white, while others had the same parts distinctly yellow. This difference in colour is said to distinguish Scottish and south of England specimens, the former showing the white and the latter the yellow coloration.

Egg.

The smooth eggs are very small, 1 mm. in length, and whitish-green in colour. The eggs which have hatched out are easy to distinguish, as the empty shells show an iridescence like mother-of-pearl.

Caterpillar.

The young green caterpillars measure ⅛ inch or so. They have a disproportionately large head, and grow very slowly. Full grown, the caterpillars measure 1 inch to 1¼ inch. Colour green. Along the middle of the dorsal surface runs a white line. Farther down on either side run two parallel longitudinal dark-green lines. Below the brown spiracles on each side is a pale yellow line. All these lines are continued over the green head, the dorsal one forming a V-shaped mark. The paler under-surface shows faint lines. The microscope reveals the presence of fine hairs. The caterpillar is 10-footed, three pairs of thoracic feet and two pairs of after-feet, one of these pairs forming the anal claspers.

Pupa.

The pupa, green to begin with, but brown later, is pointed at the hinder end. Measurements of scores of pupæ showed the smallest to be just over a quarter of an inch in length, and the largest half an inch. The dwarf pupæ were not uncommon, and being curious to see what they would yield, I took thirty-five of the very smallest which I had collected and placed them in natural conditions. Unfortunately a sufficient number of these did not give up their moths to allow of a sure generalisation, as only five moths escaped, all males. It is well known that if caterpillars suffer from a lack of food the succeeding pupæ are small, as also the imagos that escape from them. Professor Nitsche is of the opinion that the dwarf pupæ of Fidonia were the pupæ of caterpillars that had hungered; and he chronicles[1] the very interesting observation that the moths which escaped from the undersized pupæ were either incapable of reproduction, or if the females laid eggs, the number of eggs was considerably below the normal.

Distribution.

The species has a wide distribution over Central and Northern Europe. It is common over England and Scotland, and, according to Buchanan-White, is found up to a height of 1400 feet.

Food-Plants.

The common food-plant of the caterpillars is Scots pine (*Pinus sylvestris*) (fig. 36), although other species of pine may be attacked—*e.g.*, Weymouth pine (*Pinus strobus*). There are many records where, driven by hunger, the caterpillars have eaten spruce (*Picea excelsa*), silver fir (*Abies pectinata*), and even juniper. In the Nürnberg Forest I noticed many cases where spruce had been attacked and defoliated, but this attack was only on young spruces where such formed an undergrowth below the pines. In certain cases where pines had been eaten bare, one could find no pupæ in the ground below them, but in the ground below adjoining half-eaten spruce, pupæ were found. The pines had not afforded sufficient food, and the undergrowing young spruce had been attacked. I think it may be stated with all safety that pure spruce woods will never be attacked. Here and there in the forest we would come on an old spruce with its full complement of deep sombre-green needles—an oasis in the desert—standing out conspicuously amidst the surrounding browned and withered pines (see fig. 37).

Age of Tree attacked.

The moths do not frequent plantations of very young trees or nurseries. Forest in the pole stage will chiefly be attacked, trees from twenty-five to forty years old finding most favour. Now and then trees of sixty years and over may suffer—*e.g.*, in the present devastation trees of every age have been attacked and have succumbed.

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[1] Tharander Forstliches Jahrbuch, vol. xlvi., 1895.

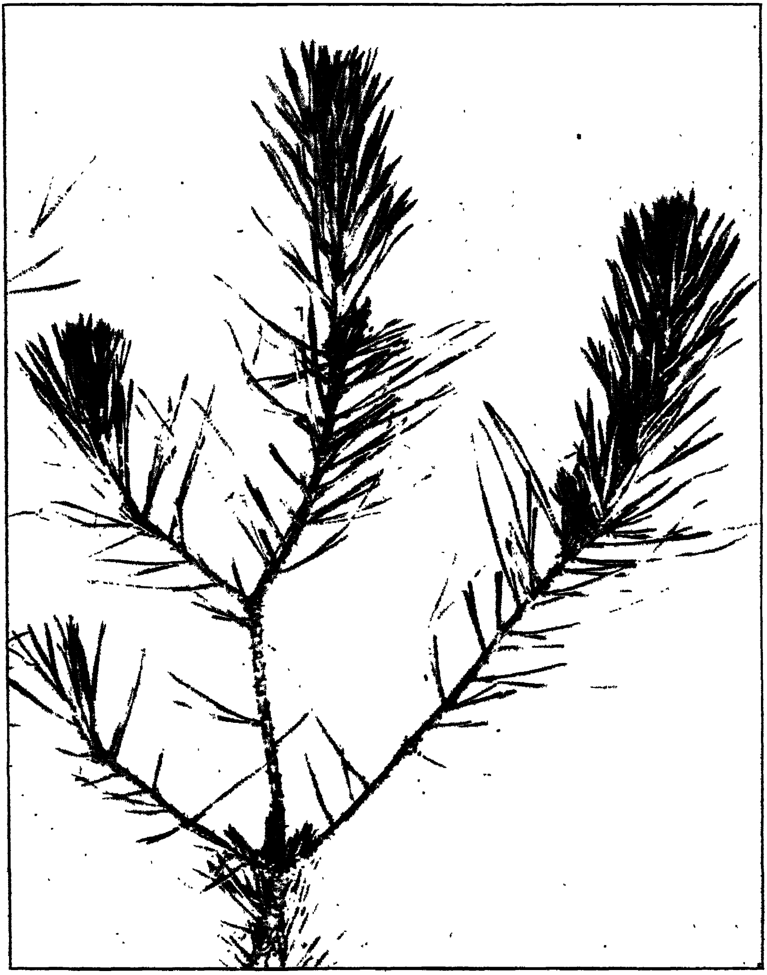

Fig. 36.—*Part of branch of Pine, showing the damage done by the Caterpillars. Here and there eggs can be seen on the needles.*

Life-History.

The general round of life of the pest will perhaps be best followed if I first exhibit the different stages in calendar form :—

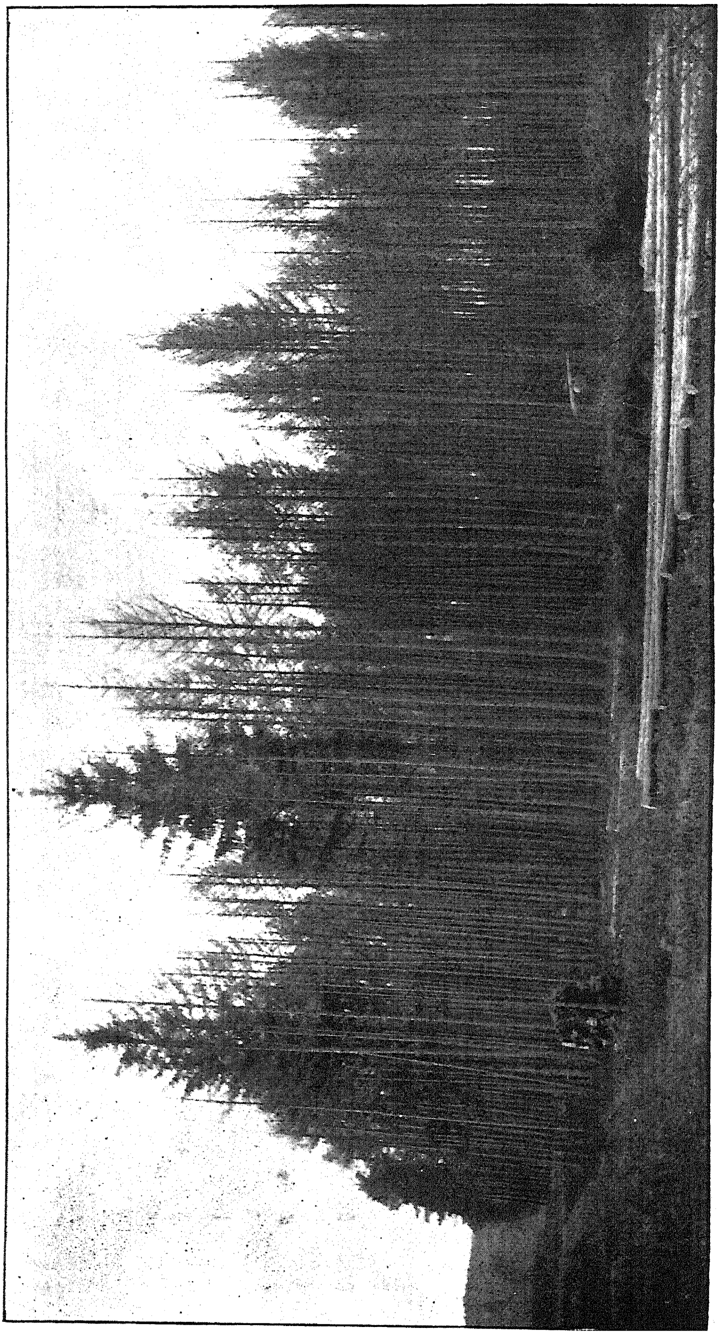

Fig. 37.—*Portion of a Pine-forest entirely defoliated and dead. Two Spruces seen on the left unharmed and healthy.*

November to April.—Pupa in ground.
May.—The first moths appear. In my experiments from pupæ collected in the forest in April the first moths escaped on May 21. During the plague they have been seen earlier than this.
June.—In this month the flight of moths is at its height. Eggs laid on the needles.
July.—Small caterpillars eating the needles.
August and September.—Growing caterpillars continue their eating. Their excrement noticeable below the food-plants.
October.—Caterpillars, full grown, descend the tree for pupation.

This calendar may be looked on as the record for an average year. It is subject to slight alterations, according to weather conditions, as, for example, in a mild winter the caterpillars have been known to remain on the trees even into December. The males are said to escape earlier than the females of the same brood; and if so, a crossing will be promoted and in-and-in breeding discouraged.

The moths, quick in flight and restless (the males especially), fly about in the daytime. When at rest their wings are held erect, a position which I noticed was also retained in copulation. For egg-laying the females choose the crowns, although in the plague of moths at Nürnberg Forest—and during the summer of 1895 they were like snow for multitude—eggs were to be found all over the trees. They avoid windy places—for example, the edges of the forest—and also places where there is a strong undergrowth, such interfering with their rapid reeling flight.

Length of Life.

Professor Nitsche, on the length of life of the individual moths, writes[1]: "The moths are said to live fourteen days to three weeks, which seems to me to be reckoned too high." In order to test their length of life I made a number of experiments, the moths being taken immediately they escaped from the pupæ and put into large well-ventilated breeding-boxes with fresh pine branches. No male lived with me more than twelve days, and no female more than seventeen days. The females, if kept by themselves with no chance of copulation, lived longer (as was to be expected) than when egg-laying, following copulation, took place. In one case I put a female newly escaped from a pupa into a breeding-box alone with a male five days old. The male lived other five days. The female died when seven days old, having laid 66 eggs. The female had emerged from the pupa on June 19 and died on June 26. The eggs hatched on July 8. In an earlier experiment eggs laid on June 7 hatched in sixteen days, so that probably the length of time required for hatching is from a fortnight to three weeks.

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[1] Lehrbuch der Mitteleuropaïschen Forst-insektenkunde. By Judeich and Nitsche. Page 962.

Where the Eggs are laid.

The eggs are laid in a row, on the inner side of the needle, very rarely on the outer side; generally in one row, very rarely in two, although I found several examples of it in my experiments. The number of eggs in a row on the needle varies. In my hatching-boxes the number varied from 2 up to 24. Numbers like 18, 20, 22, were not uncommon. In the forest, with more room at the disposal of the moths, the very high numbers were not so common as lower ones. Still I once found 25, and in another case what I am sure was 26, for although only 25 remained in the row on the needle, yet a mark was present of an egg which had fallen away.

To get some notion of the number of eggs laid by one female, I arranged two breeding-boxes, in each of which one female newly escaped from the pupa was placed, with branches of fresh pine. In the one case 58 eggs were laid, and in the other 66.

Character of the Destruction.

The very young caterpillars lay themselves flat along the needles and gnaw the surfaces, bitten patches being left here and there. The older and better grown larvæ attack the needles, not on the surface but at the edges. It may be stated generally that they begin near the apex, and work downwards. The whole needle is not devoured, but the caterpillar bites out pieces all along one edge, leaving the part of the needle on one side of the midrib uninjured; while the remains on the attacked side, from the unequal manner of eating, show a "steps-and-stairs" pattern.

While this is the most characteristic mode of attack, there are many variations. The needle may be eaten on both sides of the midrib. The damage may extend right downwards to the "bifoliarspurs," or the lower halves of the needles may remain uninjured. These lower uninjured parts may persist for a considerable time, even without losing their green colour, and giving to the shoots, with their half-eaten-away upper part, a bristle-like appearance. The "steps-and-stairs" design, a slight reddening, an ultimate browning and withering of the attacked needles, the bristle-like appearance, and an exudation of drops of resin from the wounds, are all characteristic.

Habits of the Caterpillars.

On jarring the young caterpillars, they let themselves hang by a thread, which they again ascend. This power of spinning they retain even till full grown, when they either crawl down the trees or let themselves down to the ground by their threads. Though not generally very active, if one touches them the caterpillars progress very rapidly by means of their looping movement. Arrived at the end of a needle, they wave their bodies about while holding on by their hind sucker-feet. On several occasions I observed that the grown caterpillars seemed to be very ill-natured. The social larvæ of the Pine-Sawfly (*Lophyrus pini*) sometimes get into a heap and climb over each other, and all without showing any signs of uneasiness or discomfort; but the Fidonia caterpillars I speak of appeared to be very angry if by accident two touched, and they showed their displeasure by striking at one another. In case I do the caterpillars as a whole an injustice, I had better add that where I noticed the ill-nature most, I had a suspicion that the caterpillars were not quite healthy.

The caterpillars grow very, very slowly. When fully fed they leave the trees and crawl in among the moss, or the fallen needles and litter, or, if these be wanting, into the ground, where they may lie for a considerable time before pupating.

The Pupa.

The pupa lies free, not enclosed in a cocoon. Occasionally I found the pupæ lying in a kind of cell. The pupæ are to be found not merely lying under the shelter of the tree, but scattered. It may serve to give some idea of the enormous number of pupæ in the forest, if I state that last April I had no difficulty in collecting several hundreds in a very short time, and in a very circumscribed area. Early in 1895 the Government Forest Department ordered a number of pupæ to be collected from the various forest divisions, that these might be examined for bacteria or fungi. Returns from eight different divisions showed, as gathered in each case from a square yard, the huge numbers of (*a*) 313, (*b*) 384, (*c*) 386, (*d*) 334, (*e*) 774, (*f*) 232, (*g*) 576, (*h*) 244.

Insect Companions of Fidonia.

The usual companions of *Fidonia piniaria* are said to be *Geometra liturariá* and *Geometra fasciaria*, and I captured a number of both in the attacked places. Of far greater importance, it seems to me, was the presence of another moth—namely, *Sphinx pinastri*.

In my wanderings through the forest I saw a very large number of these moths. The species is rare in Britain, and, as far as its damage goes with us, may be neglected. In the Nürnberg Forest one heard no mention of its being troublesome, and yet, from the abundance of its pupæ, which I found everywhere when hunting for the Pine Geometer pupæ, from the big swarm of moths seen later, and from the egg-laying which followed, I feel convinced that the large and greedy caterpillars of *S. pinastri* must have done more harm than was suspected.

Remedial Measures.

1. Defence against the pest, once it has got to work, is difficult,—much more so than is the case with many other destructive insects. Normally the eggs are laid high, and their destruction is not easy; still a thinning after deposition of eggs and a burning of the branches might have some effect.

2. During previous attacks by Fidonia in various parts of the Continent in 1798, in 1832, and in 1870, large fires were kindled at night in the hope that the moths attracted by the light would fly into them, but in every case the experiment was resultless and the fires discontinued. The electric light, however, has a strong attraction for the moths, many of which I noticed flew from the forest into the town of Nürnberg, where they fluttered in numbers round the electric lamps or over the windows of hotels lit by electricity.

3. Where the caterpillars have been proceeded against by jarring the trees and catching the fallen caterpillars on sheets, the results have not been favourable. The caterpillars hold on tightly and are not easily shaken off. In the case of tree-fellings it was observed that even the fall of the tree failed to dislodge many caterpillars. Besides, jarring acts prejudicially to the thinner trees.

4. Another plan tried was the use of "sticky bands." The method is to scrape the trunk at some distance from the ground in order to smooth the bark, and then lay on a narrow ring of the sticky material. There are special makes of a patent gluey-tar to be had cheaply from various German houses (its composition is a secret), and warranted to keep sticky in all weathers for two months at least. Any fallen caterpillars make for the trees to reascend, but are brought to a halt below the ring, which they will not pass, and where they can be destroyed. Against the destructive caterpillars of several other species of moths, far and away the most serviceable method is this ringing of the trees.

Unfortunately experimental evidence would seem to show that the method of tarring is not of any great service against the Fidonia caterpillars. These do not leave the trees until fully fed (unless, indeed, they descend a stripped one to reascend another in search of food), and then often by spun threads;

and the number of caterpillars which during their feeding-time may be blown down or accidentally fall to the ground is so small as to be left out of account. At most, perhaps, tar rings would be effectual against only 3 per cent of the caterpillars. An experiment may be quoted in illustration: 42,796 trees of different ages, and over an extended area, had tar rings placed round them, and in August, September, and October 102,344 caterpillars were collected under the rings out of the 2,738,944 caterpillars calculated by test fellings to be feeding on the 42,796 trees.

5. It is in the pupa stage that our pest can best be proceeded against, and most advantageously by the leading in of swine to the attacked area. On the Continent this has been much practised in preceding Pine Geometer attacks, and with excellent results. The swine could be set to work even in late autumn if the weather was favourable, and again and vigorously early in spring. If the attacked area is small, the work of the swine may be supplemented by collecting. Diligent and thorough collectors, where attack is limited, can be of great service; but if the devastation is widespread, collecting cannot be thorough enough, and would be too expensive.

6. In many visitations of Fidonia a commonly practised method has been to proceed against the pupæ by raking the litter out of the forest and burning it with its contained pupæ. It cannot be denied that in this way many pupæ will be destroyed, but a greater number are sure to be left behind, as the raking will seldom be deep enough, and the large number of pupæ that are not in the litter but in the ground itself will remain untouched. From a very extended series of countings it has been estimated that the pupæ are distributed as follows: 35 per cent in the moss and fallen needles, 60 per cent in the humus layer, and 5 per cent in the mineral soil. Nor must it be forgotten that a continual raking away of the fallen leaves and forest litter will leave the soil extremely impoverished; and as a matter of fact, this remedy has sometimes proved worse than the disease. If this raking away of the forest litter, fallen needles, moss, &c., were a real protection or defence, then of all places the State Forest at Nürnberg might claim to have been spared; for here many poor people in the surroundings possess rights that have come down to them from long time, whereby they are entitled to the forest litter for stable use or generally for purposes to which straw is put. The result is that many places in the forest are bare of soil covering, and yet in these places attack is as bad and destruction as great as in parts of the forest where the litter has not been removed.

In the present calamity at Nürnberg there have not been wanting suggestions to the Government Forest Department from the outside, a very amusing one being to stretch over the whole ground (extending to thousands of acres) a covering of gauze or muslin, so that the moths escaping from the pupæ will be caught.

Help from Nature.

A good deal of help in warring against the Pine Geometer moth is given by nature—by mammals, birds, and insects. The badger devours the pupæ with great enjoyment. Among birds the jay destroys many caterpillars. Thrushes destroy both caterpillars and pupæ; blackbirds too, and starlings. The common rook is of certain service; and I noticed in many places in the forest the upturned soil, the work of its feeding. Tits and bullfinches destroy the caterpillars. Poultry take the pupæ readily.

Among predaceous insects the family Carabidæ should be encouraged—the ground-beetles, the active and rapacious tiger-beetles, and the greedy sycophant (*Calosoma sycophanta*), unfortunately confined to the south of England, and even there not a native. Tree-bugs and spiders will also be an aid; and so will ants, for it is a matter of general experience that ants keep the surroundings of their nests clean. It is true that there are interesting exceptions, as, for example, where ants and the grub of the green rosechafer (*Cetonia aurata*) live together in seeming partnership; but although insect guests or companions or parasites are occasionally found living with the ants, yet, broadly speaking, ants do help to keep a tree free from caterpillars, especially if their nests be at or near the bottom of the tree.

Among parasitic insects the Ichneumonidæ and the Tachinidæ should be everywhere encouraged. From a good many of the Pine Geometer moth pupæ collected by me in the forest there ultimately escaped not moths but ichneumons and tachina flies, the latter two-winged, and reminding one of a house-fly, but stouter and with a number of bristly hairs on the abdomen.

Weather Influences.

A dry and warm season favours development. Doubtless a main cause of the immense destructive increase of the pest at Nürnberg lay in the preceding dry years. Heavy rains—and the moths swarm at a season when heavy rains are common—prove very destructive to the moths. For example, in Allersberg in 1868 a large number of Pine Geometer moths were seen, but by the end of June they had been almost entirely killed out by following wet and cold. Again, in the case of a large swarm of the moths in 1887 at Veldensteiner, owing to the wide area affected nothing in the way of extermination was attempted; yet in 1888 the attack was not repeated, the reason assigned being that heavy rains in June had annihilated the moths.

Cold nights prove harmful to the young caterpillars. The full-grown caterpillars, however, are more resistant. From the comparatively late appearance of the caterpillars, and their feeding often into the winter, they seem to have become accustomed to resist cold to a much greater extent at any rate than, say, the — in comparison — delicate caterpillars of the Pine Beauty (*Trachea piniperda*) or the caterpillars of the Pine Sawfly (*Lophyrus pini*). Clumps of these last, indeed, have been found killed by the cold, while on the same trees and under the same conditions the Pine Geometer caterpillars went on feeding without any evident inconvenience. Still, continued snow or frost about the time of their leaving the trees will kill numbers; and in the case of a devastation in Saxe-Gotha, which lasted from 1861 to 1864, I find it stated that the devastation came to an end owing to the severe frost of November 1864 having proved fatal to the caterpillars.

Other Conditions which favour or discourage the Looper.

Pure forest encourages, mixed forest discourages, attack or spread. Experience of attacks on the Continent during the last 150 years has proved that attack has always been far worse and the spread and consequences much more disastrous on poor, dry, sandy soil than where the trees have stood on good fresh soils. Now, in the present calamity, the Pine Geometer moth has been greatly favoured and the trees placed at a disadvantage owing to the poverty of the soil, which, poor geologically, and rendered more so by the continual raking and removal of litter, would only grow pines. The important bearing of these conditions on any future attempts to replant will be manifest. Foresters well know the difficulties that attend the replanting of any huge area felled after attack,—how questions of light and heat, frost and shelter, and growth of weeds, &c., &c., have all to be considered. But at Nürnberg the problem of replanting is exceptionally difficult, and probably there are places in the forest that will not again be able to bear plants.

Predisposition of the weakened Pines to attack from injurious Beetles.

Taken by itself, a moderate attack on the pine by the Looper caterpillars is not of much importance. The great danger in this case lies in the fact that the weakened trees—which if left to themselves might be expected to make a good recovery—may fall a prey to the onsets of injurious beetles. Under all circumstances, whether Fidonia attack be slight or grievous, there must be a constant supervision of the trees as regards the beetles which so characteristically follow in the wake of the Pine Geometer, and a strenuous bringing into play of the various measures for their diminution and destruction. Generally speaking, one can, in the case of Pine Geometer attack, warn against hasty felling. One can wait to see whether the attacked pine-trees will become green again, or their chances of life can be determined by examination after test fellings. For the sake of the timber, however, trees badly beetle-attacked should be felled and removed, as, if killed and allowed to stand, the timber will degenerate in quality and become discoloured from the attack of a saprophytic fungus—*Ceratostoma piliferum.* The spores of this fungus gain entry by the bore-holes of the beetles, and the mycelia, ramifying in the wood, and chiefly in the medullary rays, give rise to a blue discoloration. Among the beetles which follow Fidonia may be mentioned *Pissodes piniphilus, Hylesinus ater, H. palliatus, H. minor, H. piniperda.* Personally in the Nürnberg Forest I found *H. minor* and *H. piniperda* hard at work; and, indeed, the piniperda tunnels were the largest I have ever seen, the mother tunnel actually measuring in one case 11½ inches.

Chances of Recovery of Pine-Trees after Defoliation.

I have published a special paper under this heading, and exigencies of space will only allow me to say here that as the caterpillars of Fidonia are comparatively late feeders, no evil effects for the trees (predisposition to the attack of injurious beetles excepted) will follow a moderate destruction of needles. Even in the case of complete defoliation by our pest there is a chance of recovery in the next spring, as the caterpillars are late feeders and the trees will not have been stripped before autumn. Owing, however, to a combination of unfavourable circumstances, tens of thousands of the pines defoliated in 1894 in the Nürnberg Forest died.

1. The summer of 1894 had been damp and cold. This had retarded the development of the trees, which were so backward that, after loss of their foliage by the caterpillar attack had caused cessation of food-supply, complete maturing was impossible, and the tissues, especially in the region of the cambium, had not by the end of the season attained their necessary winter condition.

2. The trees had been stripped unusually early—in many

cases not later than September—owing to the enormous number of caterpillars.

3. The severity and duration of the winter of 1894-95. The temperature sank to —30° C., and the cold was long drawn out. The trees not having reached their normal winter condition, the tissues were quite unprepared to resist the great frost.

A great Felling.

When in the spring of 1895 examination showed that the stripped trees were dead, a colossal felling had to be undertaken; and as Professor Hartig, the renowned plant pathologist, advised that the trees must be felled by July, or else much of the timber would be rendered useless by beetles and fungi, nearly 4000 foresters and workmen were engaged. To house the workers, dwellings have been erected here and there in the forest by the foresters themselves, and very proud they are of their handiwork. One such erection holds 120 men—eight compartments with 15 men to each, each compartment having a separate place for cooking. In other districts smaller erections hold 40 to 50 men. The houses are entirely of wood, well built and substantial, and from several visits paid to them I can testify to their neatness and cleanness. The workmen's wages average about 4 shillings a-day—a working day being from sunrise to sunset, with short rests for meals. The work in the open is hard but healthy; and it was a pleasure to see the men at the close of a day's work shoulder their tools and march off in a body cheerily singing their Tyrolean songs.

Lesson of the Devastation.

Within the last twenty years or so there have been, both on the Continent and in Great Britain, severe insect devastations, and it is curious and interesting to note that all these devastations are merely repetitions of similar devastations towards the end of the eighteenth century.

The plagues of last century on the Continent gave rise to many inquiries as to the biology and classification of the injurious insects. These inquiries were in coincidence with the systematic work of Linnæus (1707-1778). What insects caused damage in the sixteenth century we know not. Description is not sufficient; the information is not precise enough. The seventeenth-century workers on insects were very few in number, and were chiefly anatomists, although Réaumur, at the end of it and the beginning of the eighteenth, did work out the life-history of several insects. To Linnæus, however, is due the credit of bringing order out of chaos, and rendering accurate naming and recognition possible. With the advantage, then, of the systematic work of Linnæus, observers, urged on by the devastations of the end of the eighteenth century, turned their attention to forest insects. These observers were obliged to work on the elementary things. All they knew was the presence of the insects in the forest. They were ignorant as to how the insects laid their eggs, of the appearance of the larvæ, the time of pupation, the line of development. As a result of careful observation and diligent inquiry several excellent works on forest insects appeared, and all down the present century these have been added to. In a word, the whole rise and progress of forestral zoology is compressed within the last hundred years.

The analogy I wish to draw is this. The ends of the last two centuries have been characterised by insect plagues. As the eighteenth century's devastations stimulated inquiry and led to the solution of many problems, so it seems to me the recent insect ravages should have equally valuable results in a widening and an extension of instruction in forest entomology. The necessity for wider instruction must follow the admission of a principle which it has taken us a hundred years to learn, and which can hardly fail to be impressed by the immense losses sustained by Government and private owners abroad and at home—namely, that these insect onsets cannot be combated when they have reached a certain degree of intensity.

In the case of the Nun it was afterwards recognised that the devastation originated in a limited area, and I make bold to say that in the case of many other insect plagues the same will probably be found. A plague does not become a plague in a day. The "flood comes with a crack in the dyke." To be successful in our efforts, we must attack *in the beginning*. What Ovid wrote in his "Remedy for Love" can be applied with equal force in the realm of economic entomology:—

> "Principiis obsta; sero medicina paratur,
> Cum mala per longas convaluere moras."

"Resist the first advances; too late is a cure attempted when through long hesitation the malady has waxed strong."

But for the carrying out of this principle, to stamp out when the attack is limited to, it may be, an isolated and originating spot, knowledge is necessary. Foresters must know the insects. As a necessary part of their equipment, foresters and those associated with forest management generally should have some acquaintance with forest entomology—with forest zoology; a knowledge of the round of life and the times of appearance of our most common forest insects. Furnished with this knowledge, observation and examination at the proper times would make them acquainted with anything unusual, say any increase above the normal, and thus in its beginnings a spread might be checked. To this end there is need for a wide extension of teaching in forest zoology.

I wish here to record my indebtedness to Professor Pauly for much kindness, and for the very gracious way in which he gave me the use of his laboratory for my breeding experiments. I have also to thank Dr von Tubeuf for the use of his photograpic plates. Figure 35 is from Hess's 'Forstschutz.' Figures 36 and 37 are from photographs made by Dr von Tubeuf for the Bavarian Government.

FAMOUS CLYDESDALE SIRES.

By ARCHIBALD MACNEILAGE, Editor of 'The Scottish Farmer,' and Secretary of the Clydesdale Horse Society.

IN this article it is not intended that a full account be given of all the Clydesdale sires on record to which, by a liberal interpretation, the term "famous" might be applied. That would be a work extending far beyond the limits assigned to this article, and to some extent an unnecessary repetition of the contents of the Clydesdale Stud-Book. Neither can portraits be presented of all horses entitled to be ranked as famous, nor can it be claimed that all those for which likenesses can be produced are equally entitled to the distinction. One or two portraits are included in this gallery, rather as illustrating the types of horse fancied at the dates when the animals flourished than because of anything known regarding their eminence as sires. To this category belongs the first portrait, that of the horse Champion (fig. 38).

CHAMPION.

This portrait is reproduced from a painting by Gourlay Steell, in the possession of the Highland and Agricultural Society. Champion was a brown horse foaled in 1835, and bred by a notable breeder of other days, Mr Charles Phillips, Cracrop, Carlisle. He was owned by Loudoun Cranston, Abington, Lanarkshire, and gained first prize at the Highland Show at Aberdeen in 1840.

Judging from the painting, he appears to have been a horse of weight, with plenty of strength of bone, but not at all "right at the ground" in the modern sense, nor as "sweet" in his limbs as horses are liked now. As he was a contemporary of the generation in the days after Broomfield Champion 95, this painting of another Champion has a certain historical value, and shows the Clydesdale of sixty years ago to have been a horse of some substance, and far removed from the pony stage of development.

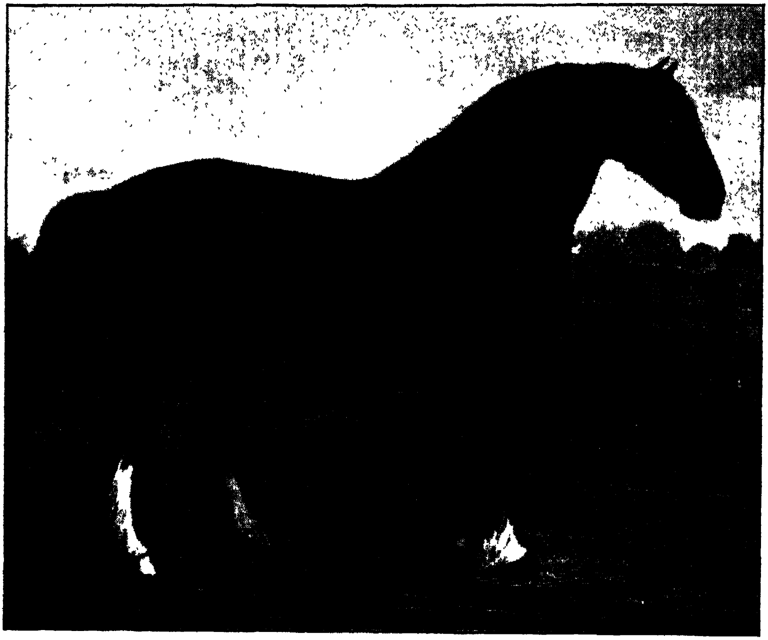

Fig. 38.—Clydesdale Stallion, Champion.

Mr Steedman's Black Horse.

Another portrait of the same character is that of the black horse bred by Mr Steedman, Boghall, which flourished about the same date (fig. 39). He must have been a horse of some reputation, as his portrait was secured by Henry Stephens, and forms one of the plates in the first edition of his 'Book of the Farm.' This portrait teaches the same lesson as the other, although the black horse does not exhibit quite as much substance as the brown.

In dealing with horses of greater individual interest historically, the writer intends to adopt the following method: to indicate briefly the breeding and showyard distinction of the horse, his characteristics, and the characteristics of his stock, and endeavour if possible to appraise his value in the development of the present type of Clydesdale. The perfect horse has not yet appeared—the best have exhibited serious defects; but as with one exception all the horses remarked upon are dead, greater freedom of treatment will be indulged in than would be attempted were the animals alive, and their value as sires to be made or marred by anything which might now be written.

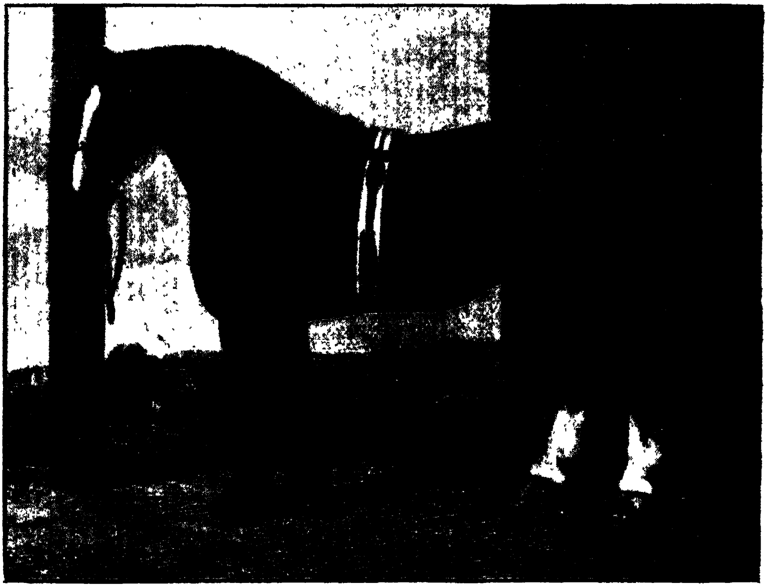

Fig. 39.—Mr Steedman's Black Horse.

Broomfield Champion 95.

At the head of the list stands this horse, concerning which much has been written but comparatively little is known. Foaled in 1831, he was bred in the parish of Shotts, Lanarkshire, and after being for a time in Aberdeenshire he was purchased by Mr James Frame, Broomfield, Dalserf, and did great service as a sire in Lanarkshire. He is described by one of the few survivors who remember him as in colour brown, of a rich dark shade. His fore-legs and feet were black, and his hind-legs were white a little way up, and after that black. He had a narrow white stripe or ratch on his forehead. He was first at the Highland Show at Aberdeen in 1834, and his portrait, if it could be found, would be invaluable. Although the sire of several recorded horses and mares, the reputation of Broomfield Champion rests almost entirely on the fact that he was the sire of Clyde *alias* Glancer 153.

CLYDE *ALIAS* GLANCER 153.

Foaled about 1835, this horse stamped his influence indelibly on the Clydesdale breed, and although not of any showyard distinction himself, he was the sire of several of the best stallions flourishing half a century ago. Clyde *alias* Glancer was locally known as "Fulton's ruptured horse"; and he has been described as a "great mickle horse," strong in the bone, and it is suspected rather coarse. His outstanding characteristic was virility; and through his sons Clyde *alias* Prince of Wales 155, Farmer's Fancy 298, and Barr's Prince Royal 647, all Highland Show prize-winners, he became quite noted as the most valuable horse of his time.

Of these three decidedly the most showy and sweetest was the first-named, Samuel Clark's Clyde 155, foaled in 1840, and first-prize winner at the Highland Show at Glasgow in 1844. This horse was a famous sire, two of his sons in their turn —Arkley's Lothian Tam 506, and Leiper's Prince 603—being winners respectively of first and second prizes at the Highland Show in 1850, and quite easily the best horses of their time. Lothian Tam was a grand horse, and I have never heard anything derogatory said about him.

Prince 603 was a very successful show horse, and bred many show animals, male and female, but it has been generally understood that he was affected with stringhalt. Somehow, after nearly twenty years' careful study of Clydesdale lore, and close intimacy with almost every one who knew the older horses, I am forced to believe that this suspicion is well founded; indeed I am not sure that Prince 603 was not on one occasion disqualified because of this defect. Be that as it may, the frequency with which his name is mentioned in the Clydesdale Stud-Book is proof of his popularity as a breeding horse.

LOCHEND CHAMPION 448.

This was Prince's best-known son. Foaled in 1856, he was spoken of as Kerr's big horse; was a celebrated animal in his time, and very successful in the showyard. He was first at the Perth Highland Show in 1861, and second at the Battersea Royal in 1862, and had his quality been as marked as his size possibly no horse of his time could have beaten him. He left a distinct impression on the breed, but as a whole his progeny, although numerous, were uneven in merit, and somewhat irregular as breeding animals. Still he was in much favour with breeders, and takes a high place in the second rank.

CROWN PRINCE 207.

A son of Lochend Champion was Logan's Lord Derby 484, which, although not specially distinguished or entitled to rank as a "famous sire," left one son at least which will not by any one be denied a place in the gallery. This was the Lochburnie Crown Prince 207 (1869-80) (fig. 40), a right true Clydesdale, having all the merits and likewise the characteristic defects of the real old Lanarkshire breed. He had a firstrate formation of head, and that part was the ideal of what the head of a Clydesdale should be. His feet and legs were all one wants, and he showed weight along with quality of bone. His defect was undue length of barrel and slackness in the back. It has also been hinted that latterly he developed more temper than was desirable. Crown Prince was twice a second-prize winner at the Highland,

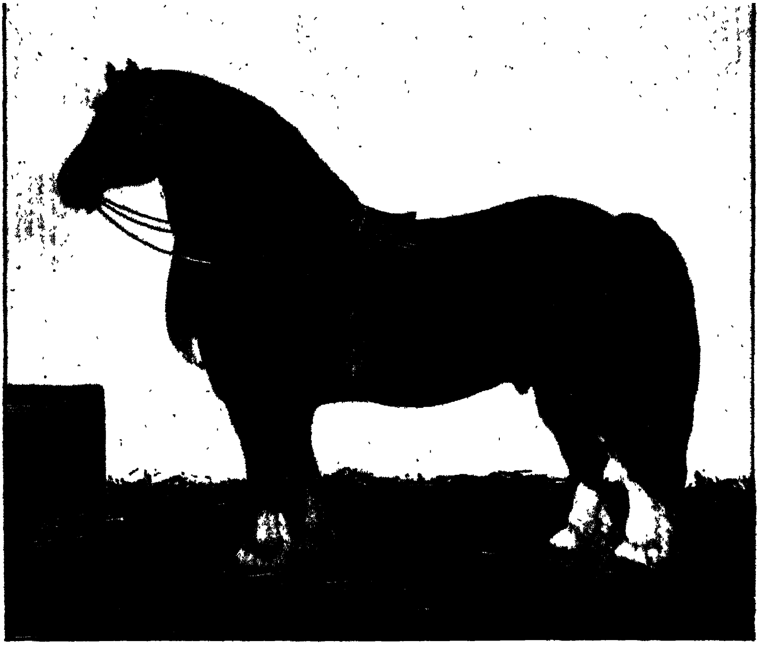

Fig. 40.—CLYDESDALE STALLION, CROWN PRINCE 207.

and once first at the Glasgow Show. He was a well-bred horse, and his dam was also dam of Young Conqueror 959 (1871-78), another horse which left his mark on the breed.

Crown Prince excelled as a sire of mares, and his most famous stock, the Auchendennan Damsel, was practically never beaten, while she was sold by public auction for 500 guineas in August 1879. A full sister named Diana Vernon was also well forward in the prize-list in 1883, and like Damsel was sold at a long price for exportation to the Antipodes.

Several other notable mares were got by this horse, but none of his male progeny came to much account. This raises an important reflection. Is there anything in the formation indicated as peculiar to Crown Prince usually associated with horses which make a reputation as sires of females? Old Times 579 (1869-89) was another such horse: while his female progeny were excellent, his male progeny were of small account.

Reverting to the produce of Clyde 155, I find that although Lothian Tam's name is mentioned in the early records quite as often as, if not oftener than, that of Prince 603, he does not appear to have made so deep an impression on the breed—a result probably due to the fact that he did not travel in districts so favourable for producing superior stock. The writer understands that he was a short-legged lengthy made animal, standing on plenty of ground, and not so handsome as Prince 603. He was a genuine Clydesdale, and deservedly stood first at the Highland Show at Glasgow in 1850. He travelled in Lanarkshire, Nithsdale, and Galloway, so that his descendants are well distributed, and I am disposed to credit him with exerting quite a definite influence in the development of the modern Clydesdale.

FARMER'S FANCY 298.

This horse (foaled in 1841) was a first-prize winner at the Highland Show of 1844, and in the following year he was second at Dumfries. His career as a sire was almost wholly confined to Kintyre, where he bred stock of first-class quality in some respects, but deficient at the ground, being rather narrow in the hoof-head and short in the pasterns. Looking back over the half century, one cannot easily determine whether his introduction was a blessing or a curse to Kintyre. The bad effects lingered long, and were unfortunately intensified at a later day by the introduction of another sire which almost seemed immortal. Kintyre Clydesdales are pre-eminent for their good bodies and sound limbs, but the native product was too often defective at the ground—alike in feet and pasterns. The first influential cause of this was Farmer's Fancy 298; its recrudescence was due to Lorne 499.

BARR'S PRINCE ROYAL 647.

This horse (foaled 1840) was the least noted in the showyard, but the most noted at the stud, of the sons of Clyde 153. In fact, from about the year 1850 onwards no other horse bred a greater number of show mares, and it is therefore hard to believe that he was not genuine. Nevertheless, the probability is that something was awanting in his breeding, as his stock were very unequal. There were mares of surpassing merit for size and quality, and others of quite a different type amongst his progeny. One of them, owned by Mr Andrew Logan, Crossflatts, was a mare which the older fanciers say they never saw equalled; and it must at least be admitted that wherever the blood of Prince Royal 647 prevails one finds weight and substance. Proof of his popularity is found in the retrospective volume of the Stud-Book, where his name occurs more frequently than that of any other of the older horses.

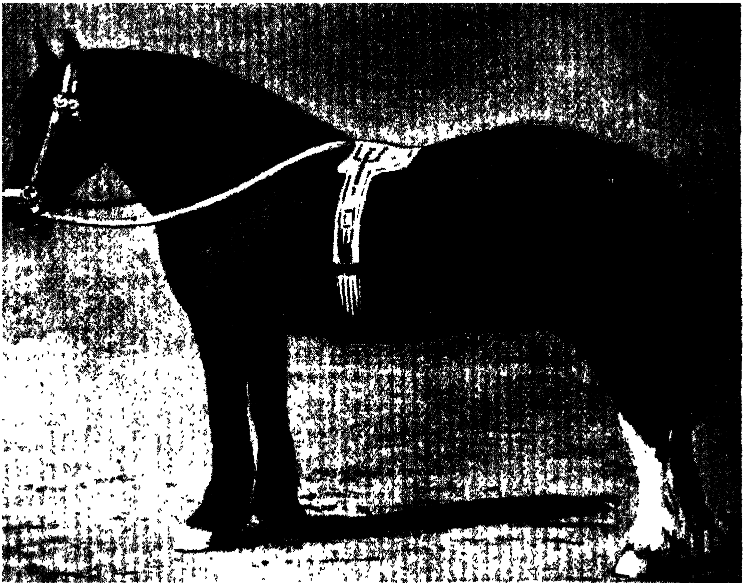

Fig. 41.—CLYDESDALE STALLION, GENERAL WILLIAMS 326.

His grandson, General Williams 326, fig. 41 (foaled 1853), was a successful breeding horse, and a second-prize winner at the Highland Show at Perth in 1861. This was one of the most typical Clydesdale horses ever seen in the show-ring, and the few of his produce alive in our time were mares of the genuine short-legged, broad-boned, deep-ribbed sort, which are known to be the best. More than one of them were distinguished prize-winners, and although there have been bigger horses, none has a better claim to be ranked amongst famous sires than General Williams. He spent his later days in the Rhins of Galloway, where he was named "The Bully." His produce wherever found bore the hall-mark of the breed, and those who remember Garscadden Maggie 41, a celebrated show mare, do not need to have that phrase explained to them. On one occasion at a Johnstone show General Williams was placed in front of Sir Walter Scott 797; but of that something more will be said later.

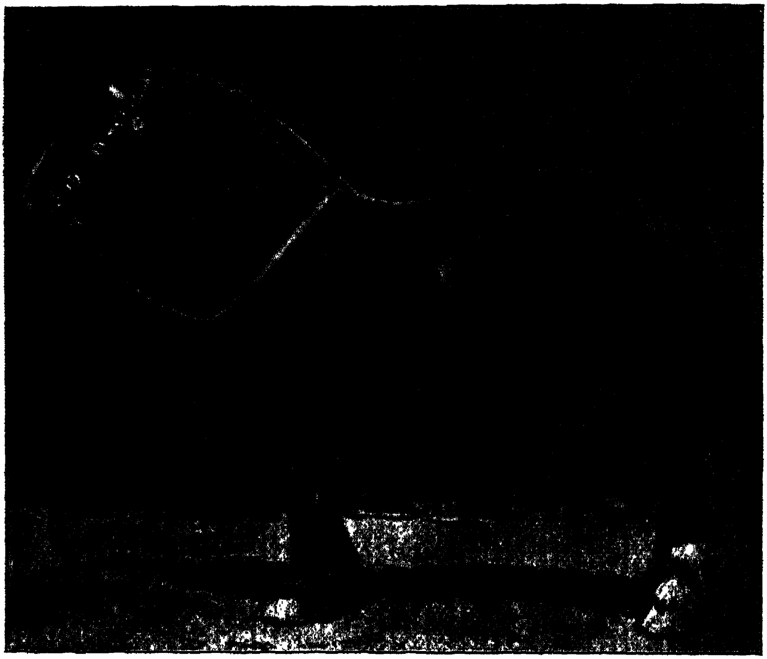

Fig. 42.—Clydesdale Stallion, Sir William Wallace 803.

Fig. 42 represents Sir William Wallace 803, a son of General Williams, and a notable horse in his time.

A son of Prince Royal which quite distinguished himself in Annandale was Proudfoot's Lord Byron 473. This horse was bred at Castle-Semple in Lochwinnoch parish, but nothing has been heard of his dam. The best mares in the South were got by him, and he enjoyed much popularity.

FARMER 284.

It may perhaps be well, in view of chronology, to introduce at this stage some reference to the race of horses known as the Drumore Clydesdales. The sire to which most of these trace is Farmer 284 (foaled in 1853), bred by Mr Robert M'Kean, Lumloch, Cadder, and owned by the late Mr Robert Anderson, Drumore, Wigtownshire. This horse was got by Glancer 338, and his dam was a daughter of Broomfield Champion 95. An exhaustive examination of the pedigree shows that he was an in-bred horse, his sire being a grandson of Broomfield Champion. He was eminently successful in leaving prize stock, and no two opinions are entertained regarding the merits of his progeny from this standpoint. Mr Anderson used him largely in his own stud, and others patronised him as well; consequently quite a large number of modern Clydesdales have his blood in their veins—and thereby hangs a tale. In speaking of a horse as a good breeding sire one may mean either of two things. The horse may have been the progenitor of showyard prize-winning animals, or he may have been the progenitor of useful workaday sound horses in greater abundance than most of his compeers. If the former kind of sire were affected with any unsoundness, it is open to question whether he is entitled to rank as a good horse, no matter what the showyard merits of his stock may have been; and it is precisely this state of matters which faces us when dealing with Farmer 284.

As the sire of three such stallions as Prince Charlie, which stood first at the Highland Show at Glasgow in 1857, when two years old, Victor 892, one of the grandest Clydesdales ever foaled, and Salmon's Champion 737, a noted horse in almost every respect—much may be advanced in his favour; but, like Naaman the Syrian, he has an unfortunate exception in the tale of his qualities: too many of his stock were affected with string-halt. Whether he was diseased in this way himself, I cannot tell, but of the fact as regards his progeny I am unable to entertain any doubt; and the same disorder occasionally appeared in the progeny of his greatest son, Victor 892. The close in-breeding of Farmer 284 will no doubt be regarded by some as a cause of this unfortunate accomplishment. Whether the explanation be adequate or not it is not intended now to inquire. The object of these notes is not speculation but fact, and it will be the duty of critics to keep this in view.

VICTOR 892.

This horse (1858-64) was, as has been said, Farmer's greatest son. He was a singularly rich and massive Clydesdale horse.

It was said by his owner, the late Mr Peter Anderson, that he never saw a horse so "rich" in good points as Victor. He had quality combined with substance in a very marked degree; and of more modern horses, Mr Anderson on one occasion informed the writer that Disraeli 234 most resembled him. Disraeli was got by Farmer 286, a nephew of Victor, out of a daughter of Victor, and was thus very likely to have inherited much of his quality, size, and style. Failing a picture of Victor, we are enabled, by kind permission of Mr John Hendrie, to reproduce a painting of Disraeli 234 (fig. 43). Foaled in 1858, Victor was all along a show horse; and although he only got second at the Highland Show at Stirling in 1864, being beaten by Logan's Lord Clyde 477, he was a better horse than that great animal, and, in spite of the defect already hinted at, a much more successful breeding horse. His career as a sire was confined to Galloway, in which he travelled for four seasons in succession, until, like the other sons of Farmer 284 already named—Prince Charlie and Salmon's Champion 737—he was exported to Australia.

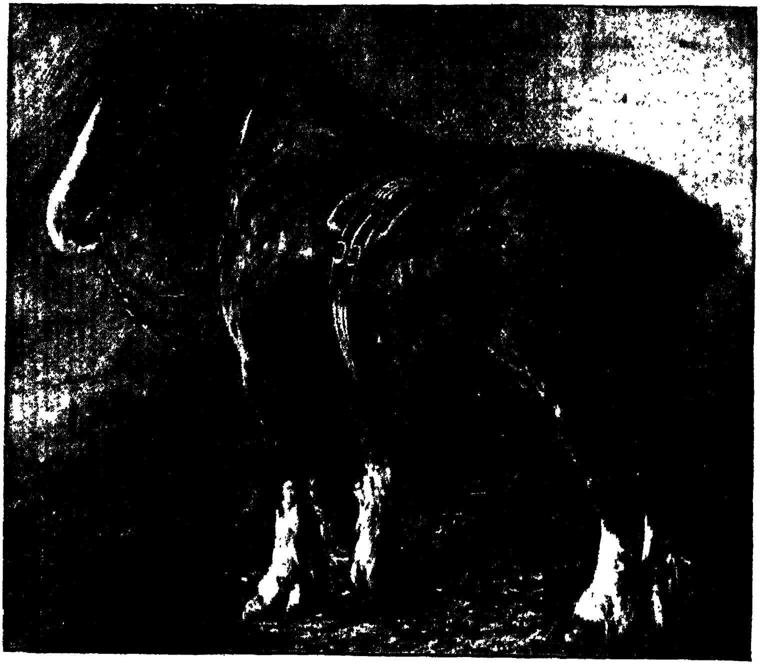

Fig. 43.—Clydesdale Stallion, Disraeli 234.

The characteristics of the stock left by Victor were good feet, the fashionable set of pasterns, very flat, clean, thin bones, good joints, short legs, good barrels, and typical Clydesdale heads. His daughters were exceptionally successful as brood mares, and they wore well. One of them, if not the last of the race, was the famous Barlae Doll 344 (1862-89), which bred for her breeder and owner, Mr W. A. M'Turk, twelve foals, and died only a very few years ago, when well over twenty years of age. This longevity is a marked characteristic of the Victor tribe. His dam, Drumore Tibbie, lived long and bred well, her four sons—Prince Charlie, Victor 892, Salmon's Champion 737, and Merry Tom 536—being sufficient to immortalise her. Her dam, again, Drumore Susie (1836-59), bred nineteen foals, twice giving birth to twins, and her record in the Galloway showyards has never been surpassed.

The later breeding successes of Victor mares were largely attained by crossing with Lord Lyon 489—a horse to which reference must be made at some length under the heading of another tribe. Several of Victor's sons made their mark in the showyards; but it is a clear indication of the size and quality of these genuine Clydesdale horses, bred at Drumore and off the Drumore race, that all the best of them, in the years from 1850-68 or thereby, were purchased for exportation to the Australian colonies. The writer knows of no side-evidence which more conclusively establishes the fact that the pure-bred Clydesdale is intrinsically an animal of great substance, and equal in respect of size and weight to any other draught horse bred in the world. If during the last two decades finer horses have been fancied and come into prominence, this is not due to any lack of weight and substance in the genuine Clydesdale breed, but rather to one of those vagaries of showyard fancy which ever and anon arise in connection with all classes of stock.

LOCHFERGUS CHAMPION 449.

Over the reputation of Salmon's Champion 737 as a breeding horse it is unnecessary to linger. He was a favourite in his time and bred good mares, but his chief claim to renown lies in the fact that he was the sire of Lochfergus Champion 449 (1861-77), not individually a show horse of much account, but undoubtedly one of the most impressive Clydesdale sires on record. He was a pure-bred Clydesdale if ever there was one, and no breath of scandal has ever played around his name. A horse of great substance, size, and strength of bone—not over-refined, but full of masculine character, with not too typical a head, but taken all in all he was a stallion of the kind produced by the Clydesdale breed before the fancy got too firm a hold of it.

Lochfergus Champion was bred by Mr Gordon of Enrick, at Barstibly in the parish of Ringford, Kirkcudbright, in the year 1861, and he lived for sixteen years—dying in the hands of the late Mr Moubray of Cambus early in 1877, after arrangements had been made that he should serve in the Keir stud during that season.

As an indication of his popularity as a sire, it may be mentioned that his name occurs more frequently in the retrospective volume of the Clydesdale Stud-Book than that of any other of the historical sires, except Barr's Prince Royal 647. He was the sire of several notable horses—nearly all of them being, like himself, distinguished by size and substance; but his fame as a sire rests chiefly on the excellence of his female produce. In fact, so well thought of were Lochfergus Champion mares by the older race of Clydesdale breeders, that in the absence of a pedigree register there was no more popular imagination on the part of horse-dealers than that a good big, wide, deep mare was got by Lochfergus Champion. He was the unwitting cause of a good deal of proverbial loose talk on the part of those who had mares to sell.

With all their excellences, however, the Lochfergus Champion mares had frequently one fault. They were sometimes rather "rattle-skulled," and difficult to break into harness. They were not ill-tempered, but they had a way of their own in plough harness; and nearly all of them were inclined to be "quick." One such was at one time owned by Mr Andrew Montgomery. She passed into the hands of Mr John Allan, Glasgow, than whom no horse-dealer handles a better class of horses. Mr Allan sold her to a farmer in East Lothian, and there she wrought well when alone, but her mettle was so high that she would brook no comrade. Eventually she came back to Glasgow, and was last seen, with spirit undaunted, engaged in driving pig-iron—the most slavish and heart-breaking work to which a horse can be put. This was a grand mare—and she illustrated in a marked degree the faults and also the excellences of the race to which she belonged.

The two most famous show mares got by Lochfergus Champion were Whittlebury Jean 228 and Borness Bet 265. And it is a curious fact that while such were the characteristics of his female progeny, his chief claim to remembrance as the sire of stallions rests on the paternity of a medium-sized horse, Conqueror 199, which in his turn became the sire of the world-famed Darnley 222.

ROB ROY 714.

Not related to the race of Lochfergus Champion, but in the breeding of one notable horse, Drumflower Farmer 286, allied with it, is the blood of an old Clyesdale sire named Rob Roy 714. This is a horse about whose antecedents little definite is known. He may have been foaled about 1845, but the date is very uncertain. He was bred by the late Mr William Fulton, Sproulston, in Lochwinnoch parish, and was the result of a surreptitious union between a two-year-old colt from Lanark fair and a three-year-old filly. Of his undoubted Clydesdale lineage no question has ever been raised, and possibly of all the older horses he best represented the original Clydesdale type. He did not serve any mares until somewhat advanced in life; and indeed all notion of using him as a stallion was for a time abandoned, and he was wrought as an ordinary farm-horse by Mr Crawford, on Ardneil farm, West Kilbride. This experience seems to have been beneficial in awakening dormant usefulness as a sire; and alike in Kintyre, where he was owned by the late Alexander Campbell, and in the Rhins of Galloway, where he was owned by Mr James Salmon, he bred useful and even high-class stock. His produce had usually first-class feet and legs, with fine, clean, flinty bones, and good joints, but like himself many of them were inclined to be rather low and "easy" in the back. Hence his *sobriquet* in Kintyre, "Sandy Campbell's laigh-backit horse."

It would be incorrect to say that all Clydesdales having this tendency are descended from Rob Roy, but if we saw a horse with this feature clearly marked, we should immediately suspect its affinity to the Rob Roy tribe.

In Kintyre the most noted of his progeny was the well-known horse Blackleg 71, which stood first at the Highland Show in 1859, and was sold by the late Mr Peter Crawford for exportation to Australia. In Wigtownshire he probably did not leave any produce equal to Blackleg as show horses, but he left two sons which far surpassed that horse as breeding animals. These were Hercules 378 and Merry Tom 536, the latter uterine brother to Victor 892 and the other Drumore horses already referred to.

LORD LYON 489.

Hercules bred long and well in the Rhins of Galloway, but of all his progeny the most outstanding was undoubtedly Lord Lyon 489, a horse (1867-81) concerning which many things might be said. He was bred and (except for two seasons) owned without intermission by Mr John M'Master, Culhorn Mains, Stranraer. He enjoyed a unique reputation for breeding show-yard stock. His dam was a mare which came from Staffordshire, and he was roan in colour. His first two seasons in the Rhins of Galloway did not demonstrate much as to his future pre-eminence, and hence Mr M'Master sold him to a gentleman who travelled him in Forfarshire two seasons. His stock, however, as they began to develop, awakened great hopes for the future, and the horse was bought back, greatly to the pecuniary advantage of breeders in Galloway.

At the Highland Show at Inverness in 1874 several fine fillies after Lord Lyon were exhibited, and at all the principal shows for several years—indeed until 1882 or 1883—the leading honours, especially in the younger female classes, went to him. Perhaps the success of Lord Lyon stock culminated in 1882, when at both the shows held in Glasgow in that year a magnificent string of two-year-old fillies were exhibited after him. These were mostly out of mares got by Victor 892, Glenlee 363, or Farmer 286; and, indeed, unless when mated with well-bred mares of that line of breeding, Lord Lyon did not specially distinguish himself.

The outstanding characteristics of his progeny were a first-class formation of hind-leg, good backs and ribs, fine heads, and clean flinty bones. It was thought that they were somewhat soft; and certainly not a few of the show animals got by him went down with laminitis, but several of the best wearing mares in Wigtownshire, which had not been fed for showing, were his produce; and, on the whole, his stock stood the ordeal of the showyard almost as well as the stock of most other noted sires. What is most disappointing in them is the fact that very few of his sons have been of much account as breeding horses. All of them known to us were at one time or other of their lives "foundered," and the two which bred best were Young Lord Lyon 994 and King of the Forest 1170. Lord Lyon was an exceptionally virile horse: he had a masculine head, and was full of the indefinable something which impresses the eye at once as peculiar to a good breeding horse.

MERRY TOM 536.

This horse (foaled 1860) is the other son of Rob Roy 714 to which reference need be made. He was not a show horse nor to any great extent the sire of show animals. Still he is well entitled to be regarded as a "famous Clydesdale sire," because probably none of the horses already passed under review was equal to him in producing a uniform race of useful breeding mares. All three Drumore horses, the produce of Tibbie—Salmon's Champion, Victor, and Merry Tom—travelled in the Stewartry, and of the three public opinion favours the last as the most satisfactory. His stock very likely were deficient in showyard points, but they were remarkably sound animals, and the mares amongst them bred well.

DRUMFLOWER FARMER 286.

The late Mr Rain of Miefield, when Merry Tom was in Kirkcudbright, had a fine big mare by Lochfergus Champion 449, which he mated with Merry Tom. She was sold during the ensuing season to Mr Robert Frederick, Drumflower, and in his possession produced a colt. The mare is known as Mary of Drumflower 112, and the colt as Drumflower Farmer 286 (1869-83). In him, therefore, the blood of Rob Roy and Lochfergus Champion is blended, and it will also be observed that he was strongly in-bred to Drumore Tibbie.

Farmer was a great favourite with breeding societies. He had premiums in Dumbartonshire and Bute, and was sold at the Kirkwood sale in the autumn of 1879 for 160 guineas to Mr Moubray of Cambus. At his sale in July 1881 the old horse was again sold for 265 guineas to Sir Robert Loder, Bart., and remained at the head of the Whittlebury stud in Northamptonshire until he died in 1883.

No one who ever knew Drumflower Farmer would subscribe to the doctrine that the Clydesdale was undersized or lacking in weight and substance. He was a horse with plenty of these properties, sound as a bell, with good legs and feet, and a fine broad head. Like his sire, his back was rather long and "easy," but his other qualifications were unmistakable. Many good colts were found amongst his progeny, and his female stock were distinguished alike in the show-ring and the breeding-paddock. They possessed much of the same character as their sire, being big and wide, standing always on good legs, and covering plenty of ground.

Those who recall the stallions Disraeli 234, Druid 1120, Sir Colin 777, and Knight of Snowdon 2212, the great gelding Farmer exhibited by Mr Colin Campbell about fifteen years ago, and the fine mare Maggie of Whitehill 4721, which stood first at the Dumfries Union Show in 1883, will need no further illustration of the wealth of substance and weight to be found in the family of Drumflower Farmer. It was sometimes objected that the feet of horses of this tribe were apt to be too wide and soft, and, on the whole, the objection is perhaps well founded. That and their length of back may perhaps be put down as the chief defects of the tribe, although they were not by any means universal characteristics of the race.

M'KEAN'S PRINCE CHARLIE 629.

Before finally leaving this tribe, a line or two may be written about a horse closely allied by blood to Drumflower Farmer. We mean M'Kean's Prince Charlie 629, whose sire was Vanquisher 890, a son of Lochfergus Champion, and his dam the Milmain mare Beauty *alias* Jess 355 by Victor 892. Prince Charlie was bred by the late Mr John Ralston, Milmain, Stranraer, and was foaled in 1870. He was owned successively by the late Robert Brewster, Barnbeth, Kilmalcolm, who passed some of the best Clydesdales of his time through his hands, Mr Robert M'Kean, and Mr George Bean.

Prince Charlie was a singularly unequal horse. To one standing in front of him, he appeared to be invincible. He had plenty of substance, a fine broad intelligent countenance, very deep chest, short strong fore-legs, and a grand shoulder. His back and fore-ribs were all right, but he was short in the back-rib, light in the flank, and very poorly developed in the thighs. In fact, he was one-half a first-class horse and the other half not even fair. He bred very well, indeed, in almost all the districts in which he travelled, but unluckily not a few of his progeny in Wigtownshire developed stringhalt. Apart from that, they were true to Clydesdale character in many respects; and his female progeny, alike in the show-ring and as brood mares, were quite above the average.

One of his daughters, Young Mary of Drumflower, was first at the Highland Show at Glasgow in 1875, and was simply a magnificent mare. Her produce, however, had the family failing, and Mr Frederick stopped breeding from her. Being so closely in-bred to Drumore Farmer 284, it is hardly to be wondered at that the fault which belonged to his race should have made its appearance in the produce of M'Kean's Prince Charlie, which were bred in Wigtownshire out of mares of allied blood. I cannot say that I ever heard the same complaint regarding his produce bred in other parts of the country; and, indeed, most of his stock were distinguished for soundness and breeding qualities.

GREY EMPEROR 369.

It is needful that attention be now turned away from Galloway. The next race of horses on which some notes may be given springs from the old fountainhead of Broomfield Champion 95, but is chiefly identified with Stirlingshire. As an example of the horse popular in the close of the forties, mention may be made of Grey Emperor 369. This horse, foaled in 1843, was bred in Stirlingshire, and was owned by Mr Samuel Clark. He was a horse of great symmetry and quality, and won first prize at the Highland Show at Edinburgh in 1848. His sire, Blyth 79, was also grey, and at the Highland Show stood second in 1840 and first in 1841. He was got by Clydesdale Jock 172, a half-brother of Broomfield Champion 95, and the dam of Grey

Emperor was got by Broomfield Champion himself. Blyth's dam was got by a coaching stallion, and the race are not without traces of this influence in some of their characteristics. In spite of that, Grey Emperor was by no means the only one of the produce of Blyth which distinguished himself, Young Blyth 923, another grey horse, being first at the Highland Show at Edinburgh in 1859, when seven years of age. This shows the calibre of these horses, and speaks well for their hardiness.

CAMPSIE 119.

The chief point of contact between Grey Emperor and the modern Clydesdale is to be found in Young Campsie 929, whose sire, Campsie 119 (1858-74), is certainly entitled to rank as a famous Clydesdale sire. He was a black horse, and was owned for the greater part of his career by Mr David Riddell. He was a compact, short-legged, well-ribbed horse, rather light in the forearm, but standing on good feet, and in many districts leaving a great and improving impression as a breeding horse. He was first at the Highland Show at Kelso in 1863, and his district premiums were numerous. There have been more sensational horses, but not many were so uniform or well-balanced in every way as Campsie 119. Nothing has been learned about his dam; but his sire, Johnnie Cope 416, was first at the Highland Show at Glasgow in 1857, when three years old, and was a very well-bred horse.

The horse known as Young Campsie 929 was a son of the older horse (119), and his granddam was by Grey Emperor 369. Unfortunately he was not at all equal to his sire in merit, being "sclatchy" and long and hollow in the back, with less indication of hardiness than his sire. Still he won the Glasgow premium two years in succession, and was third at the Highland Show in 1869. He bred fairly well, his female produce taking rather a good position—one of them, especially, named Haughhead Bell 288, taking rank amongst the best breeding mares Scotland has ever produced. She lived to a great age—indeed the writer questions if she be yet dead, although if alive she must be twenty-eight years old. She was alive three years ago, and from first to last bred over a dozen foals, one of them being the celebrated prize mare Louisa 5841.

Young Campsie was sold for exportation to Austria in 1869. He was not at all as good a horse as his sire, but probably excelled him as a breeding horse. The most notable descendant of the Campsie tribe was the well-known horse Topgallant 1850, whose dam was a daughter of the older horse—and some of the most common characteristics of the tribe were seen in Topgallant.

SAMSON 741.

This reference may well come in as an introduction to quite a different family, but one which more than any other has made its mark on the Clydesdale of to-day. Its chief and head was the Keir stud horse, Samson 741 (fig. 44). This horse (1855-72) was, taking all things into consideration, the most wonderful sire in the history of Clydesdale breeding.

Samson was bred by Mr Andrew Logan, Crossflatt, Kilbarchan, and was got by Lofty 455, a son of the Kintyre Farmer's Fancy 298, while his dam was Jess by Hilton Charlie 381, granddam a chestnut mare bought in Falkirk Tryst. As with all impressive sires, the pedigree of Samson indicates line-breeding, but not injurious in-breeding.

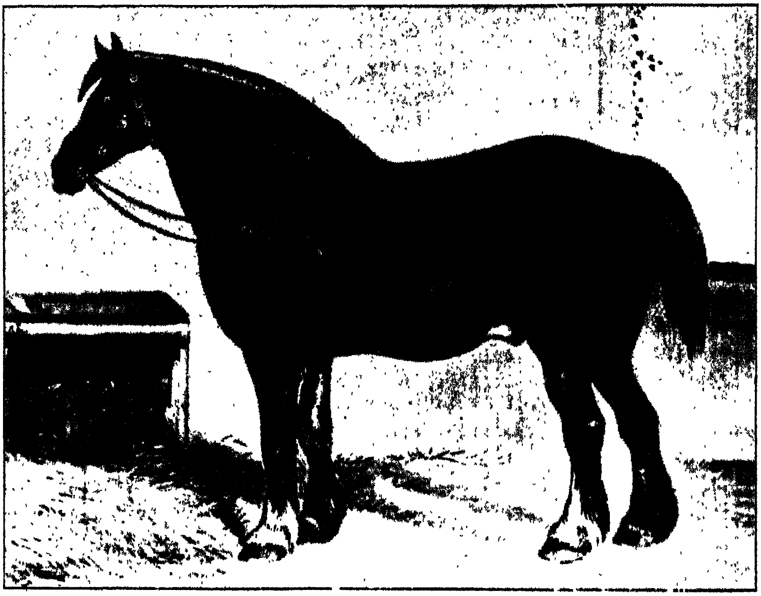

Fig. 44.—CLYDESDALE STALLION, SAMSON 741.

Not a big horse in the usual acceptation of the term, Samson was a horse of singular symmetry and quality. He has been spoken of as indifferent in merit; but when the charge is sifted it resolves itself into little more than a general notion that he was rather undersized when young, and was almost never shown. His local title was "Logan's Twin," and to the fact indicated by the name may be attributed his slow growth. His sire and dam were both big and good, the former having won the Glasgow premium, while the latter was first as a yearling at the Highland Show at Perth in 1852, and second at the same Society's Show at Berwick-on-Tweed in 1854. Her sire, Hilton Charlie, was got by Clyde 155, and his dam was by Clydesdale Jock 172, so that those who have read attentively what is written in the previous part of this paper can readily appreciate the in-breeding of Samson. His uterine brother, Lord Clyde 477, was the horse which beat Victor 892 at the Highland Show at Stirling in 1864. He was also first at the same show at Dumfries in 1860, when a three-year-old, and second to Campsie 119 at Kelso in 1863. Although a much grander horse than Samson, he was not nearly his equal as a sire. What most surprised onlookers was the great size and substance of the mares got by Samson. Four of the most celebrated breeding horses of the past thirty years—Prince of Wales 673, Old Times 579, Darnley 222, and Steel's Prince Charlie 628—were out of mares of this sort. All of them were daughters of Samson, and the dams of the two most famous horses of the quartette were quite remarkable for their size and substance.

Darling, the dam of Prince of Wales 673, Keir Peggy 187, the dam of Darnley 222, and Hawkie, the dam of Old Times 579, were noted as prize-winners, the two first named securing the highest honours the Highland and Agricultural Society had to bestow. Darling was first at the Highland Show in 1865, and Keir Peggy 187, the Barnbrock filly, was second at Kelso in 1863, and first at Stirling in 1864. The former, as far as we can find, bred six foals, of which four were stallions. Her later foals were Young Darling 237, foaled in 1872, and Kate 784, foaled in 1873. Both were prize-winners, and bred prize-winners,—the champion horse Cairnbrogie Stamp 4274 being a son of the former. The male produce of Darling were in succession Prince of Wales 673 in 1866, Prince Charlie 626 in 1869, Prince Arthur 623 in 1870, and Prince of Clydesdale 654 in 1871. She died in the possession of Mr Lawrence Drew, and was a fresh old mare even at a good age.

Keir Peggy lived from 1860 until 24th November 1888, and produced ten foals, three of which—Pollok 592, Newstead 559, and Darnley 222—were first-prize winners at the Highland Shows.

It would be idle to contrast or compare these mares: their contribution to the successful development of the Clydesdale breed will be best realised by reflecting on the careers of Prince of Wales and Darnley.

SIR WALTER SCOTT 797.

The first link in this chain will be Sir Walter Scott 797, which was foaled in 1855 at the Barr, Largs, Ayrshire, and was successively owned in Scotland by Mr David Riddell and the Duke of Hamilton. As depicted in the painting here reproduced, belonging to the Highland and Agricultural Society, Sir Walter Scott 797 (fig. 45) was a bay horse, with a beautiful crest and extra good action, but not too big or heavy. His spirit, action, and style gave him a great "lift" in the showyard, and he was quite easily the best horse of his day. He was first at the Highland Show in 1860, and at the Royal International Show at Battersea in 1862. His principal opponents were Kerr's big horse Lochend Champion 448, and Barr's General Williams 326 (fig. 41)—horses of wholly different types, and neither of them like Sir Walter Scott. Lochend Champion was big, strong, and inclined to be coarse; General Williams was short-legged, deep in rib, and, so far as that was concerned, like the duke's horse, but he lacked his style and action. As far as the writer knows, Lochend Champion never beat Sir Walter Scott; but at a show of the West of Scotland Agricultural Society, held at Johnstone, General Williams accomplished this feat. There was a suspicion in the minds of some that the Battersea champion was a shade too active in his movement behind, and the judges on

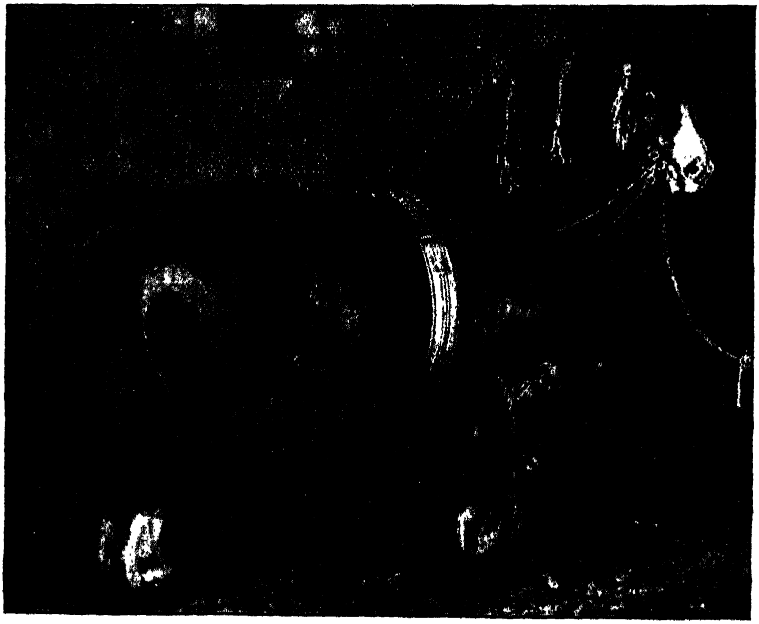

Fig. 45.—Clydesdale Stallion, Sir Walter Scott 797.

the occasion referred to gave effect to the suspicion, to the advantage of General Williams. Sober-minded men, not disposed to be biassed as a rule, scout the idea of Sir Walter Scott being "nerved," and on all the evidence available the verdict must be "Not guilty."

The main lines through which Sir Walter Scott blood is carried at the present day are those of Time-o'-Day 875 and Prince of Wales 673. Both tribes are characterised by first-class style and action; but while an occasional "get" of Prince of Wales may be rather wide behind, the tribe of Time-o'-Day are not so generally marked in that way.

The generation between Sir Walter Scott and Prince of Wales is represented by General 322, a horse of much greater size and bulk than his sire. Foaled in 1862, and bred by Mr Thomas Morton, Dalmuir, he was also owned by Mr Riddell, and was exported to Australia after winning first prize at the Highland Show at Inverness in 1865. His dam was a grey mare named Maggie *alias* Darling, which won first prize at the Highland Show at Glasgow in 1857 as a brood mare. Her pedigree is not recorded, and various stories have been current regarding it. That to which I attach most importance credits her with being foaled in Cumberland, and got by Merry Tom 532, a very handsome grey horse, which came to Glasgow in 1852 and won the premium there. He was also first at the Highland Show at Berwick-on-Tweed in 1854, and at the Royal at Carlisle in 1855. Whatever her pedigree, Maggie *alias* Darling was bought in Dumfries fair from the late Michael Teenan, horse-dealer, by the late William Giffen, horse-dealer, Mearns, who sold her to Mr Wilson, manager for Mr Buchanan, Wellshot, Cambuslang; and it was from Mr Wilson, through his son, that the writer received the information that the mare was bred in Cumberland, and got by Merry Tom 532.

Regarding the merits of General, opinions widely differ. Some say he was an unsound horse, and that his dam left many foals, but only two of them were free from stringhalt, and General was not one of the two.

PRINCE OF WALES 673.

The eminence of General was in a sense the result of pure accident. He was the first-prize horse at Inverness in 1865, and Darling was first-prize brood-mare on the same day. She came in season at the show, was served by General, and the result was Prince of Wales 673 (fig. 46), one of the longest-lived Clydesdales on record (1866-88), and taking that into account, without cavil the most remarkable horse of his generation. He was bred by Mr James Nicol Fleming at Drumburle farm, in Carrick; was foaled by Mr Quintin Dunlop, now of Morriston and Pinvally, who was then manager for Mr Fleming; he became successively the property of Mr David Riddell, Mr Lawrence Drew, and again, on Mr Drew's death in 1884, of Mr David Riddell. At the Merryton dispersion sale on 17th April 1884 he was bought by Mr Riddell at auction for 900 guineas, being then eighteen years old. For the next three seasons he was stationed at Blackhall, and during the last two years of his life (1887-88) he travelled in the Rhins of Galloway.

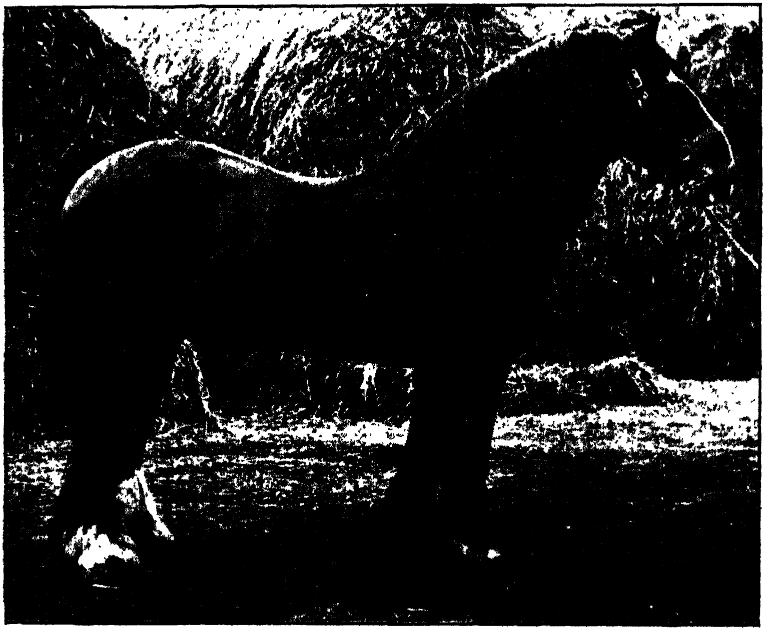

Fig. 46.—Clydesdale Stallion, Prince of Wales 673.

The dam of Prince of Wales, as already remarked, was Darling, bred by Mr Robert Knox, Foreside, Neilston, and got by Samson 741. Her dam was a wide, low-set grey mare named Kate, purchased in Dumfries market by Mr William Giffen, horse-dealer, and sold by him to Mr Knox. She was a little hard in her temper, and not too easily handled. Hence her price was not high, but she bred pre-eminently useful stock in Mr Knox's hands, and, in spite of her indifferent temper, was a good investment. Great speculation has been aroused regarding her pedigree. Many have alleged that she was an English mare, but Mr Knox once told the writer that he never heard the story and did not believe it. It has been said that, like his other grand-dam, this relative of Prince of Wales was bought from Mr Teenan, while yet another story credits her with being got by Blyth 79—the grey horse to which reference is made in an earlier part of this paper. Somehow the writer is impressed with the probability of this story: in the first place, because it explains certain characteristics of the Prince of Wales tribe; and in the second, because it is quite consistent with the story that the mare came from England, Blyth 79 having travelled in the South for several years. On reference to the Stud-Book it will be found that the sire of the dam of Blyth 79 was Julius Cæsar, a coaching stallion. It will not be denied that quite a number of the produce of Prince of Wales have been distinguished by action which was scarcely that of the cart-horse. However, these are after all but fruitless speculations at this distance of time.

Prince of Wales had two features more characteristic of the Shire than of the Clydesdale. His head was rather narrow and "Roman-nosed," and his hocks were inclined to be rather straight. Whether this latter was due to the dam's side of the house may, however, be doubted. His grandsire, Sir Walter Scott, had a half-brother named Largs Jock 444 which was locally known in Kintyre as "Sandy Campbell's straight-legged horse." He and Sir Walter Scott were both got by Old Clyde 574, bred by Mr George Scott, Barr, Largs, and the first entire horse owned by Mr David Riddell, in whose possession he won third prize at the Highland Show at Aberdeen in 1858.

Prince of Wales had a very remarkable career in the show-yard. He was second at the Highland Show at Glasgow in 1867, when a yearling; first at the Highland Show at Edinburgh, and the Royal Manchester in 1869, when a three-year old; second at the Highland Show at Dumfries in 1870, and first at the Highland Show at Kelso in 1872.

These showyard victories sufficiently attest his individual merit: as a sire his supremacy cannot be assailed. The highest-priced and most successful prize horses and mares of the past thirty years have been got by Prince of Wales. Early in the "seventies" his merits as a breeding horse became prominent through the success of Knox's Rosie, a black mare—dam of Dunmore Prince Charlie 634—and first four times at the shows of the Highland and Agricultural Society. Later his son, Prince of Albion 6178, performed a similar feat, being first in 1887, 1888, 1889, and 1890, and he caps this record by being sold when a two-year-old horse in 1888 for £3000, the highest price ever paid for a draught-horse of any breed. The full brother of Prince of Albion, named Prince of Kyle 7155, was sold at the same age for £1600; and he also has had a distinguished career in the showyard, although his victories have been usually gained at the earlier spring shows.

For several years Prince of Wales stood at Merryton home farm as the property of the late Mr Drew. He was latterly generally mated with Shire mares specially selected to suit him, and in this way Mr Drew bred a large number of first-class show animals. These he disposed of annually at sales held in April, and in the years 1877, 1878, and 1879 high prices were realised at these sales. The highest was 1000 guineas, paid in 1878 by the late Mr John Waddell of Inch, Bathgate, for the Clydesdale two-year-old horse Duke of Hamilton 2074.

Perhaps the best animal, bred from a Shire mare by Prince of Wales 673, which came to maturity was Prince of Avondale. He won at the Glasgow Spring Show in 1883, and again in 1884; and was also first at the Highland Show at Stirling in 1881, when a yearling. This was an exceedingly handsome horse, full of style and an exceptionally good mover.

Another very good horse bred in the same way was Rosebery, a light bay-horse—rather wanting in his thighs, but good at the ground, and a nice mover. He was first at the Highland Show at Perth in 1879 when a three-year-old, and stood second at the Glasgow Spring Show in the same year.

Amongst females bred on similar lines, the two best were probably Grand Duchess, which stood first and won the cup when a three-year-old at Glasgow in 1881; and Minnie, a very handsome mare, which stood first in the Brood Mare class at the Highland Show at Dumfries in 1886.

Excellent as were these and other animals similarly bred which might be named, it will be generally admitted that the choicest of the progeny of Prince of Wales saw the light in the closing years of his life. One of the best of his earlier successes was Luck's All 510, which won the championship at Perth in 1879; but Prince of Albion, Prince of Kyle, Prince Alexander 8899—the highest-priced yearling colt ever sold, his price being £1200—Prince of Carruchan 8151, together with the mares Irene 12,641, Montrave Maud 11,786, Lady Louisa 12,036, Scottish Snowdrop 11,976, and many more, of which space does not permit mention, were all got after he re-entered the possession of Mr Riddell in 1884. Either the horse was most fruitful in the closing years of his life, or the terms (£40) at which he was offered to the public by Mr Drew were so prohibitive that he was not much patronised during the period of his sojourn at Merryton. Whatever the cause, it is impossible to examine the records or recall the events of the Scottish showyards from 1871 to 1896, during which quarter of a century the produce of this horse were hardly ever absent from competition, without realising that he was most successful as a sire in the beginning and at the close of that epoch. This is not the place to attempt an explanation of this state of matters, but the writer believes the facts are correctly represented by what has been advanced.

It is not easy to determine the position which in the end will be assigned to Prince of Wales in the development of the Clydesdale breed. A sire so long-lived and so prolific could not but leave an indelible impression, and yet when one attempts to estimate the result one seldom gets past the phenomenal showyard career of many of his produce. Briefly the position may be summed up thus: The most distinguished showyard animals, and the animals which have drawn the highest prices, were got by Prince of Wales; but considering their numbers and wide distribution, the sons and daughters of Prince of Wales have on an average not been so successful at the stud as could have been desired.

Style and action are the most outstanding features of the stock of Prince of Wales. None of them are, strictly speaking, undersized, and most of them are up to full size and weight. If weak points are to be looked for in the produce of Prince of Wales, they chiefly appear in the formation of the head, shortness in the back rib, and straightness of hock, combined with a tendency to go "wide behind." This last is perhaps the most pronounced defect, and that most frequently found in the Prince of Wales race. It spoiled one of the best sons he ever bred, and probably the best breeding horse amongst all his progeny—viz., St Lawrence 3220, winner of first prizes at the Glasgow Stallion Show in 1882 and 1883. As a typical cart-horse—barring this one defect—I do not know that Prince of Wales ever got a better animal than St Lawrence. Unluckily he contracted the peculiar ailment known as "pink-eye," with the result that for several years he was practically lost to the country.

What probably makes it so difficult to estimate the value of Prince of Wales blood is the fact that it has always been easier to find a son of Prince of Wales which mated well with mares of other strains, than to find stallions which mated well with Prince of Wales mares. In recent years the best "hits" in this latter direction have been made with Darnley 222, Sir Everard 5353, Macgregor 1487, and Goldfinder 6807. In view of the many animals of both sexes still surviving after the Merryton old horse, it would be premature to dogmatise on his place in Clydesdale history, or to prophesy as to the final verdict of breeders on the question.

DARNLEY 222.

The great rival of the Prince of Wales, and in many respects his needful complement, was Darnley 222 (fig. 47), whose career lasted during 1872-86, and still his influence is being felt. Bred by the late Sir William Stirling Maxwell, Bart., Darnley was foaled at Keir on 11th April 1872, and died at Blackhall on 30th September 1886. His sire was Conqueror 199, a horse bred in Kirkcudbright, and got by Lochfergus Champion 449 out of a mare got, we have reason to believe, by Jack's the Lad 400. This mare was well known in the Stewartry, and lies buried in a bog in the croft on the farm of Culcaigrie, in the parish of Twynholm. A moss oak marks her grave to this day. She was a good specimen of the original Galloway Clydesdale, having excellent feet and legs and a hardy constitution, but was not of the largest size.

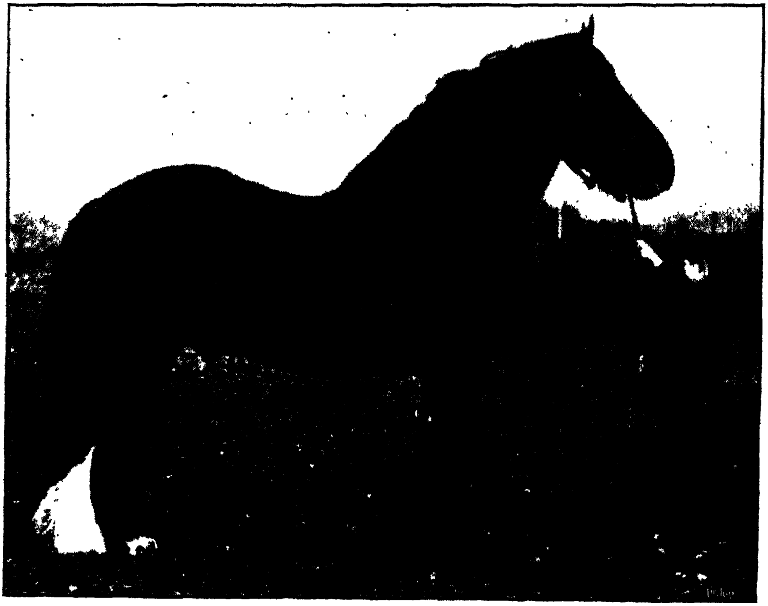

Fig. 47.—CLYDESDALE STALLION, DARNLEY 222.

The story of Darnley's birth is an admirable illustration of the accidents in breeding. His dam, Keir Peggy 187, was not very easily stinted, and in 1871 she had rather baffled the staff at Keir, so that it was thought well to have her served with the local district horse Conqueror 199: she settled, and the result is known to the world in Darnley.

As already indicated, his dam, Keir Peggy 187, was, like the dam of Prince of Wales, got by Samson 741. She was bred by Mr Hugh Whyte, Barnbrock, Kilbarchan, in 1860, and her dam was Jean, bred by Mr James Holmes, Sclates, Kilmalcolm, and got by Farmer's Fancy 298. The stock from which Jean sprang have a history on Sclates farm which dates from the beginning of the present century at least.

It will thus be seen that there is no more genuine Clydesdale on record than Darnley. He had a distinguished showyard career. As a yearling he was second at the Highland Show at Stirling in 1873. He was purchased by Mr Riddell when three years old, and remained in that gentleman's possession until he died. He was first exhibited by Mr Riddell at the Glasgow Stallion Show in 1876, when he was first, and in 1877 he repeated this victory, and was also first at the Highland Show at Edinburgh. In 1878 he won the special champion cup at the Highland Show at Dumfries, beating the four first-prize winners in their respective classes—Ivanhoe 396, Druid 1120, Roderick Dhu, and Blair-Atholl 1066. In 1882 he won first prize at the Highland Show at Glasgow as the sire of the best group of five animals over one year old exhibited, his representatives being Sanquhar 2393, Macgregor 1487, Topgallant 1850, Clan Campbell 2675, and the celebrated prize mare Louisa 5841. On that occasion a group by Prince of Wales 673 was second, and a group by Lord Lyon 489 third. In 1884 he won first prize in the aged class, and the champion cup at the centenary Highland Show at Edinburgh; and in 1884-86 he travelled in the Rhins of Galloway with marked success. He also won second prize at the Royal International Show at Kilburn in 1879, and in the following year he was first at the Royal Show at Carlisle.

Nothing further is necessary to emphasise the remarkable individual merit of Darnley. He was of a beautiful dark dappled bay colour, with the white markings shown in the accompanying photograph. His points are best summed up in the expression, a well-balanced horse. His defects were—lightness in the forearms and thighs, and a tendency to droop in the quarters; his head and ears were rather small, and he was not a phenomenal mover when trotting, having a distinct tendency to "dish" his forefeet. He had excellent blue feet, neither too big, nor too narrow—in fact, just right; genuine, clean, hard, flinty, sharp bones; good strong joints, a magnificent neck and shoulder, grand back, and ribs uncommonly well sprung, and withal he could walk as a cart-horse should walk, and in a fashion which no horse I have ever seen could surpass. Darnley was a horse which "grew upon" the onlooker. He did not carry the field by storm, but he won his way to victory through sheer force of merit. The longer he was studied the more was he liked, until it was impossible for any bench of judges to pass him if he were in normal health. His defeat at Kilburn by Druid was due to illness, as the horse was not in the best of form.

Darnley bred excellent stock from first to last, but fairly surpassed himself during his three closing seasons in the Rhins of Galloway. As a whole his stock are marked by a strong family likeness—never more clearly exemplified, perhaps, than at the Highland Show at Perth in 1887, when his fillies carried almost everything before them. This family resemblance descends to the third and fourth generation, and the finely-laid shoulders, well sprung ribs, and good legs, nearly always betoken the Darnley tribe. The horses which appeared in his group at Glasgow in 1882 were a significant indication of the class of stock Darnley was going to leave. Clan Campbell was exported in that season, but Sanquhar, Topgallant, and Louisa, unquestionably made their mark as breeding animals; and Macgregor 1487 (fig. 48) still survives—the *doyen* of the breed—and in his twentieth year enters on his third season in the Rhins of Galloway.

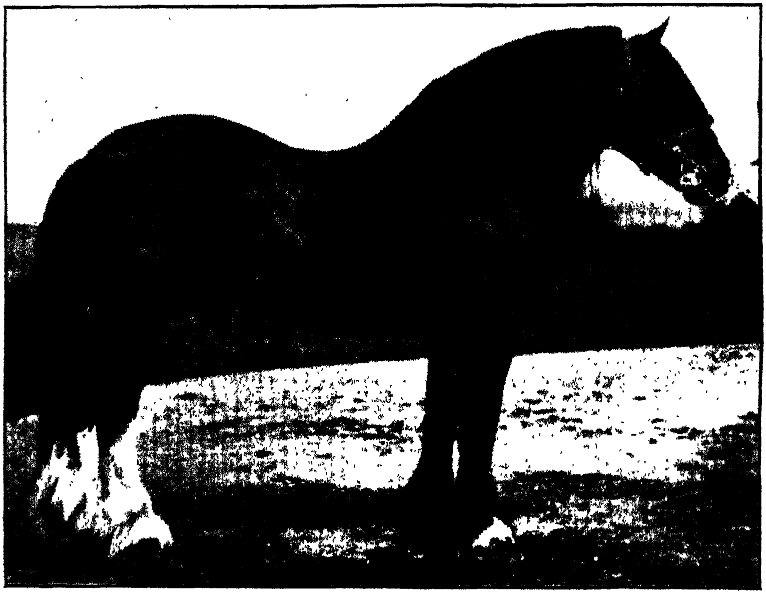

Fig. 48.—Clydesdale Stallion, MacGregor 1487.

To appreciate Darnley's contribution to the formation of the

Clydesdale type of to-day is not difficult. Not many of the best horses and mares of the present and the past twenty years can be named which are not closely related to Darnley or his dam Keir Peggy. There are out-crosses, and there have been first-class animals which claimed kindred with neither, but the name of no horse is more frequently mentioned in the pedigrees of show animals than that of Darnley. There have been no £3000 horses amongst his sons, and no £1000 mares amongst his daughters, yet it is the bare truth that but for Darnley the £3000 horse would never have existed, nor, indeed, any of the best animals got by Prince of Wales except those like Prince of Carruchan, whose dams were got by Old Times. The highest priced horse ever got by Darnley, as far as we know, was Top-gallant 1850, for which Sir Michael R. Shaw Stewart, Bart., paid £1400 in 1881; and the highest priced yearling was Flashwood 3604, for which Mr Pollock paid £900. Nevertheless, no horse probably ever lived whose produce, taking them altogether, left more money in a district; and certainly no horse ever lived whose daughters were equal to those of Darnley for breeding purposes.

At the Glasgow Stallion Show in 1889 all the horses in the prize-list of the open aged class were descended from Keir Peggy, Flashwood 3604 being first, Sir Everard 5353 second, and Grand National third; and in many seasons from 1884-92 there were more district premium horses travelling which claimed Darnley as their sire than there were got by any other horse.

Of stallions whose dams were got by Darnley it may be necessary to name but a few in order to show how pronounced is the influence of this famous horse. To this category belong Prince of Albion 6178, Prince of Kyle 7155, Prince Alexander 8899, Mains of Airies, Prince of Clay, Handsome Prince, Pandora's Prince, Prince Stephen 9363, Prince of Fortune 9826, Prince of Erskine 9647, Vanora's Prince 9461, Prince of Craigend 10,104, The Royal Prince 9053, Prince of Garthland 9829, Holyrood 9546, Brooklyn 6547, Master Robin 8040, Prince Grandeur 9638, Vanguard (Marshall's), Montrave President 9808, Fergusson 9526, and Duke of Rothesay 9191. All of these were district premium horses or stud horses at good rates in 1895 or 1896, and in addition there are several superior horses whose dams were got by sons of Darnley. Under this head are included Baron's Pride 9122, Knight o' Cowal 10,074, Prince Albert of Rosehaugh 9357, and Montrave Kenneth 9622; and it is further to be remarked that the sires of all but one of these horses were closely related to Darnley also. Any one acquainted with contemporary Clydesdale history can readily appreciate the significance of the foregoing list.

The difference between Prince of Wales and Darnley strikes me in this way. In order to secure the best results with the former, the mare had to be carefully selected, and the result, when this was happily accomplished, not infrequently was an animal of quite exceptional merit and eminence in the show-yard. Darnley, on the other hand, never produced anything so sensational, but his produce all through were much more uniform, the average was higher, and the results in the third generation were much more satisfactory. The family resemblance remains. There are many first-class animals, male and female, by Prince of Wales out of Darnley mares, but the number of animals of equal merit by Darnley or his most characteristic sons out of Prince of Wales mares is limited. To sum up. Darnley was the better bred horse, and therefore more impressive as a sire. The stock of a district would be improved by the use of a horse of his character more rapidly than by a horse like Prince of Wales; but the latter would leave the more meritorious animal when carefully mated. What has to be most avoided at the present time is a tendency to make a corner in Prince of Wales and Darnley crossing, ignoring the many valuable out-crosses to which reference has been made in the earlier part of this paper.

RAISING NEW VARIETIES OF POTATOES.

By A. Findlay, Markinch, Fife.

My earliest recollections relating to the potato go back to the disastrous year 1846, when the talk about the disease made a strong impression on my infantile mind. I was then only in my sixth year, but I can remember well the serious way in which the reports of the disaster were spoken of, and the consternation produced when it came to be known that our own gardens and cottered lots had become affected. My father, like most of his class—a quarryman or day-labourer,—had, besides his fairly large garden, several lots of potatoes growing with the neighbouring farmers, and out of the whole had not as many sound potatoes as he required to plant his usual garden-plot. Now one can understand what this meant to a community of working people mostly blessed with large families, and whose incomes at the best, even with the advantage of a full crop of potatoes, were only sufficient, and barely so, to keep the wolf from the door.

And these early impressions were unfortunately only to be the more deeply impressed by the ever-recurring partial, and often almost as serious, years of disaster to the potato crop. Much was then, as now, said and written of this terrible scourge, but all seemed powerless to suggest any remedy worth a moment's attention.

But there was always some one here and there introducing a new variety that for a time at least did not suffer so badly as the older sorts; and that fact was to me suggestive of a power within the plant which, if properly understood and developed, would enable it to resist wholly or partially its great enemy, whatever that enemy might be. This crude and youthful notion of mine was considerably strengthened by the introduction of the Victoria, and later by the introduction of the Champion. I may here say that I held these opinions in utter ignorance of the nature of the plant or its enemies, beyond what was apparent to the most casual observer.

But so great was my interest in the potato that, when commencing business as a general merchant in my twenty-fourth year, I began to study the lists issued by the leading seedsmen, and made a point of buying a few tubers of every new variety offered, in the expectation of finding that which I wanted—namely, a hardy potato, yielding abundantly, and of good shape and quality. Every year, however, left me a disappointed man; the object of my search a veritable "will-o'-the-wisp." Trusting that others would do what I ought to have been trying to do for myself, I allowed this state of matters to continue till I reached my thirty-first year, when I resolved at all hazards to strike out for myself, and began to give the matter my earnest study. I thought of Bakewell and other noted breeders of live stock, and wondered what would be the result of the adoption of some of their methods—of judicious mating and selection—if applied to the potato. I resolved to try my hand at cross-fertilisation and selection, and thus if possible to found a breeding stock with which to accomplish the object I had in view.

My first years were devoted to what I might almost call indiscriminate cross-fertilisation—that is, I made crosses in every possible direction, making due note of what I had done, and carefully watching and noting the results. These results were in many cases far from encouraging. For example, all my crosses with the Champion were utter failures—wild and worthless beyond conception. But although little or nothing was obtained of commercial value, the lessons taught have been of the greatest importance to me in my afterwork: I learnt what to avoid and where to persevere.

It was, however, out of these early experimental hybrids that, in 1880, I managed to secure the Bruce, the result of a cross between the Victoria and the Late Rose. I had thirty plants from this cross, all comparatively worthless, with this one exception. And so anxious was I that I should have it at its best, that in the autumn of 1882 I discarded the whole produce with the exception of one potato from the *best plant*—that is, one tuber that in point of shape and general appearance commended itself to my judgment. I may here mention that I am of opinion that before I made my cross I had by years of careful selection brought both the Victoria and the Late Rose to a higher state of perfection than they had ever before reached. This course I have followed in all my later work. And I am persuaded that to this great care taken with my breeding stock I owe a great amount of the success that it has been my good fortune to obtain. I am as careful in the selection and treatment of my breeding stock as ever was the most scrupulous breeder of animals.

In reference to the Bruce potato, it may be interesting to note that I offered it to a few of my farmer acquaintances, in the spring of 1886, at the very modest price of 12s. 6d. per cwt., and only succeeded in finding a few buyers, which at the time greatly damped my ardour. In 1887, however, I managed to sell a few hundredweights more than I did in 1886. Though not yet hopeless, I was again disappointed, and I had left on my hands more than I well knew where I was to find the land on which to plant them. At last I did obtain the land, and it was lucky for me that I did, for in the spring of 1888 the character of the potato got abroad, and I not only sold my own but the spare stocks of my customers of the previous years at £10 per ton. The Bruce was now famous, and made its way everywhere, if not to my own immediate profit, at least to that of those who had been fortunate enough to invest early and extend their acreage to meet the demand.

This successful Scoto-American hybrid (the Bruce) made me anxious to try again in a similar direction, but always with strict selection previous to mating. As a result I was able in the spring of 1889 to offer Lady Fife, a cross between the Victoria and the White Elephant, and also the Thane of Fife, Her Majesty, and Lady Frances, all out of these varieties. Then in 1890 I brought out Jeanie Deans and Early Beauty, out of what I may call a double Scoto-American cross. First cross, Victoria and Beauty of Hebron; second cross, seedling thus raised, and a natural seedling of the Old Blue Don.

In the course of my work, notwithstanding my comparative success in the use of the Victoria, I had become impressed with the idea that in spite of all my care decrepitude and old age were on the plant, that it was no longer of much use as a variety to breed from, and that these Scoto-Americans, good as they were, had defects and shortcomings that must be got rid of. These double crosses, Jeanie Deans and Early Beauty, though not in every respect equal to my ideal, went far to convince me that my surmise was fairly correct, and acting on this idea I selected a new set of breeding stock-hybrids—new in a sense, but still long enough under selection to have fairly well-fixed characteristics. With this fresh stock I began operations anew, and in the spring of 1893 I was able to offer small quantities of the Farmer's Glory (which is a decided advance on the Bruce) and also Up-to-Date (fig. 49). This last-named is regarded as the most remarkable late potato ever introduced—such is the opinion of my friend Mr Hope of Eastbarns, and his opinion is fully corroborated by every one who has grown it in Scotland, England, and Ireland. So prolific is this variety that it is quite common to read in agricultural or other newspaper reports of crops of from 18 to 40 tons per statute acre, according to whether the crop was grown under field or garden culture; and there is entire unanimity as to its hardiness and fine cooking quality.

Fig. 49.—Up-to-Date Potatoes.

As further evidence of the value of carefulness in selecting breeding stocks, I may mention the success of my newer early potatoes Snowdrift, Challenge, and British Queen, which came scatheless through last year, when almost every other variety of their respective classes were badly injured by disease.

The amount of labour involved in the raising of these new varieties of potatoes has been very great. I have in my time had many thousands of hybrid seedlings through my hands, having sometimes had as many as five hundred sorts under my care and observation in one season. In this work, unfortunately, there can be little or no subdivision of labour. It has had to rest wholly on myself, even to the digging, at least until the varieties have reached the fourth or fifth year of their existence. Then there are many disappointments—many blanks and few prizes. But it is a labour of love, and I work on hopefully.

FEEDING EXPERIMENTS CONDUCTED AT MAINS OF LAITHERS, 1895-96.

By Dr A. P. Aitken.

The feeding experiments carried out under the direction of the Society during the last two years, and described in the volume of the 'Transactions,' 1895, brought out some results which were not in accordance with generally accepted opinions regarding the relative feeding-value of some of the feeding-stuffs in common use.

It is generally supposed that linseed-cake possesses qualities that cause it to be superior to all other kinds of concentrated fodder. Hence we find that there is far more linseed-cake used in this country than there is of all the other cakes put together, and that it fetches a higher price than any other manufactured fodder of similar composition. It was found, however, in these experiments that other fodders, so mixed as to contain the same amount of nutritive matter as linseed-cake, brought on the stock quite as well as it, and in some cases even better.

Considering the large amount of money spent annually in the purchase of feeding-stuffs, it was regarded by the Directors of the Society as an important matter to carry out a series of experiments so as to determine eventually the relative feeding values of the feeding-stuffs in common use.

That such experiments may be of any value they must be carried out on a pretty large scale. Former experience has amply demonstrated the utter worthlessness of most feeding experiments in which one, two, three, or even four cattle were contained in each lot. In the experiments of 1894-95 the lots consisted of eight head of cattle each, and even with so large a number it was found that individual peculiarities among the cattle were not without their disturbing effect, and it was considered expedient to increase the number to ten if possible in any future inquiries.

The experiment which forms the subject of this report was undertaken at the request of the Society by Mr John Milne, Mains of Laithers, Turriff, with five lots of ten cattle each.

The object was twofold: in the first place to discover whether the market prices of certain concentrated fodders bore a definite relation to their effective feeding value; and in the second place to see whether the progress made by the different lots bore any definite relation to the "nutrient or albuminoid ratio" of the fodder they consumed.

The fodders selected showed a wide range of difference in the proportion of albumen they contained, and also a considerable range in market price.

They are shown in Table I., wherein are shown the prices of the various fodders per ton, and the allowance per head per day given to each lot of cattle.

TABLE I.—CONCENTRATED FODDERS USED IN FEEDING EXPERIMENT AT MAINS OF LAITHERS, 1895-96.

Lot.			Price per ton.		Allowance per head per day. lb.	
I.	Decorticated cotton-cake meal . . .			110s.		7¼
II.	Decorticated cotton-cake	equal values of both	110s.	90s.	$3\frac{10}{16}$	9⅜
	Dried brewers' grains		70s.		5¾	
III.	Linseed-cake meal			120s.		6⅔
IV.	Barley bran			80s.		10
V.	Oats, bruised . .	equal values of both	100s.	95s.	4	8½
	Maize, ground . .		90s.		4½	

The experiment was put on what may be called a money-basis. The allowance per head per day was fixed at a certain definite value—namely, that quantity of each feeding-stuff which could be bought at the time at the price of 10 lb. of barley-bran.

It had been found in the previous experiments referred to that barley-bran did remarkably well as a by-fodder, although it is the fodder that is least known of those that were tried. It was found that cattle could consume easily 10 lb. per head per day of it; and accordingly the price of that quantity of barley-bran was fixed upon for all the fodders—viz., about 4½d. per head per day. A money basis such as that has its disadvantages. Market values are constantly changing, and what is cheap to-day may be dear to-morrow, but it was thought a basis of that kind would be most easily apprehended.

Barley-bran, although comparatively little used as a by-fodder in this country, is well-known on the Continent. It is estimated that about 12,000 tons of it are produced in Scotland annually as a by-product in the manufacture of pearl-barley, but it is chiefly exported to Holland for consumption in that country and in Germany. An additional object the committee had in view in making this large experiment was to see whether barley-bran would occupy again the position of advantage it held in the former experiments, for if so it would be well that farmers knew it, so that we might utilise our own by-products instead of shipping them off to be consumed in other countries.

The other by-fodders employed are familiar to every feeder, and need no description. They are all liable, however, to considerable fluctuation in composition. In Table II. are shown the analysis of the by-fodders used on this occasion.

TABLE II.—ANALYSIS OF BY-FODDERS AND STRAW USED IN FEEDING EXPERIMENT AT MAINS OF LAITHERS, 1895-96.

	Albuminoids.	Amides.	Oil (ether extract).	Carbohydrates, &c.	Woody fibre.	Ash.	Moisture.
Decorticated cotton-cake meal	42·66	...	13·52	20·05	7·97	6·65	9·15
Linseed-cake (Harburg). .	30·0	...	9·0	32·5	8·0	6·5	13·0
Dried grains	15·75	1·53	6·54	40·15	15·06	5·02	15·20
Barley-bran	12·69	2·10	5·27	53·27	10·07	5·00	11·60
Oats	11·30	...	6·40	57·40	8·75	2·85	13·30
Maize	10·50	...	3·75	67·15	3·55	1·35	13·70
Oat-straw	1·75	1·79	3·71	43·49	26·69	4·77	14·80

It will be seen that they present a very great range in the proportion of albuminoids—from over 43 per cent in cotton-cake to less than 11 per cent in oats and maize.

The cotton-cake proved to be exceptionally rich in oil, but considering the highly nitrogenous character of the cake and the liberal allowance consumed daily—viz., 7¼ lb.—it was thought to be no disadvantage from a digestive point of view that the only cake of the kind in the market at the time contained so much oil. There was a doubt as to the ability of the cattle to consume daily so much decorticated cotton-cake, but they were put to it gradually, and they were able to consume the whole of their diet. It may be, however, that they had more than was judicious during the first month, for though under that diet they progressed more rapidly at first than the other lots did, they had less appetite during the second month, and lost ground for a time.

The decorticated cotton-cake and linseed-cake were ground to meal, so that they might be similar in character to the other concentrated foods.

The experiment began on 19th December 1895, and terminated on 9th April 1896—sixteen weeks in all. The cattle employed were chiefly cross-bred Irish cattle—viz., eight of each lot. These had been bought by Mr Milne as calves fifteen months previously, and had been weighed monthly all that time, so that no difficulty was experienced in dividing them into five very equal lots. To make up the ten there were added to each lot two home-bred polled cattle, and each lot of ten contained six steers and four heifers. They were arranged two in each stall. Their staple fodder consisted of 50 lb. per head of pulped yellow turnips, all of which was eaten, and straw *ad libitum*, which was given to each pair in weighed bundles as in the previous experiments.

The cattle were weighed every four weeks, and their individual weights on each occasion are shown on the tables pp. 173-177. (X. to XIV.), as also the weights of the straw consumed by each pair during each of the four periods.

A summary of the whole is given on Table III.

TABLE III.—FOOD CONSUMED AND INCREASE IN LIVE-WEIGHT OF FIVE LOTS OF 10 CATTLE EACH DURING 112 DAYS.

Lot.		By-fodder.		Turnips.	Straw.	Live-weight increase.
			lb.	lb.	lb.	lb.
I.	Decorticated cotton-cake meal . .		8,120	56,000	9,518	1242
II.	Decorticated cotton-cake-meal . .	4,060	10,500	56,000	9,369	1487
	Dried brewers' grains	6,440				
III.	Linseed-cake meal .		7,466	56,000	11,166	1341
IV.	Barley-bran . .		11,200	56,000	10,164	1596
V.	Bruised oats . .	4,480	9,520	56,000	8,853	1417
	Ground maize .	5,040				

All the lots ate the whole of their by-fodder, so that the quantities consumed as given on the table represent the same money value—viz., £20 per lot, or £2 per head during the sixteen weeks. The lots also entirely consumed daily the 50 lb. per head of pulped turnips, and could doubtless have consumed more, but they were left to satisfy their further appetite with oat-straw.

The quantities of straw consumed by the different lots per head per day were as follows:—

Lot.	lb.	Lot.	lb.	Lot.	lb.
I.	8·5	III.	9·9	V.	7·9
II.	8·4	IV.	9·0		

Considering the small amount of turnips consumed, the cattle might have been expected to eat nearly half as much again of straw as was found in the experiments at Mains of Laithers in 1891 ('Transactions,' vol. iii. p. 225); but evidently the straw was not sufficiently appetising, and it is to the small amount of straw eaten that is due the deficiency in total organic matter consumed daily by these cattle, as will be shown later.

The first thing that strikes one in glancing over the figures in Table III. is that, with the exception of Lot I., the lots that made the most progress were those that received the most by-fodder, irrespective of its quality. A closer examination shows that the increase in live-weight made by Lots I., II., IV., and V. was in direct proportion to the amounts of by-fodder consumed. The only one out of proportion is Lot III., which, had it followed the same rule as the others, should have increased in live-weight only about 1060 lb. or thereby, instead of 1341 lb. That lot made up for its deficiency of by-fodder by consuming the largest amount of straw. The total amount of straw eaten was about the same as that of the by-fodder, but it will be seen that, over the whole lots, the abundance of straw eaten was not in inverse proportion to the amounts of by-fodder consumed, so that when the quantities of by-fodder and straw are added together the numbers exhibit considerable variation, viz.—

Lot.		lb.
I.	By-fodder and straw	17,638
II.	" "	19,869
III.	" "	18,632
IV.	" "	21,364
V.	" "	18,373

The remarkable thing about these results is that Lot IV., that had barley-bran, which contains so much non-nitrogenous matter, should have consumed so much straw, and that Lot I., consuming a highly nitrogenous by-fodder, should have consumed so little.

It may seem an unscientific thing to add together these two constituents, differing as they do so widely in composition and in feeding value, but it has a useful purpose; it shows how the different lots filled their stomachs, and serves as a measure of appetite.

An examination of the progress made by the cattle from which these totals are obtained, shows that in each lot except one there are individuals that have done very poorly—so poorly as to markedly reduce the figure representing the increase in live-weight of the lot; and it is doubtful whether these ill-feeding individuals should be retained, as it is evident that their want of thriving was due to idiosyncrasy rather than to the nutritive qualities of the food they ate.

In Lot I. there was one steer—viz., No. 4—who was off his feed for some time owing to ill-health, and whose record would have unduly depressed the total increase of the lot. There is no doubt that for the sake of accuracy he should be removed, and that has been done, and he is credited with the average increase of the rest; but in Lot V. there are two—viz., Nos. 8 and 9—that went back in condition for a time, or at least failed to progress, though there was nothing markedly wrong with them; and the same may be said of No. 1 of Lot III., and probably No. 8 of Lot IV. All these made less than 90 lb. increase, and it becomes a question whether the whole of them should not be excluded. On the other hand, there are two cattle—Lot. IV., No. 9, and Lot V., No. 4—who progressed far above the average, and as that too is due to idiosyncrasy, they also in fairness ought to be excluded if the poor feeders are. I think it is better that no exceptions should be made save in the case of Lot I., No. 4, and any idiosyncrasies must be regarded as sufficiently counterbalanced by the largeness of the number of cattle in each lot.

We may now consider the total amounts of the various food constituents eaten by each lot. The food constituents of the two variable fodders, the concentrated fodders and the straw, are shown on Tables IV. and V.

TABLE IV.—FOOD CONSTITUENTS OF CONCENTRATED FODDERS CONSUMED.

Lot.		Crude albuminoids.	Oil.	Carbohydrates.	Woody fibre.
		lb.	lb.	lb.	lb.
I.	Decorticated cotton-cake meal.	3464	1098	1628	647
II.	Decorticated cotton-cake meal.	1732 } 2891	549 } 970	814 } 3389	324 } 1290
	Dried grains	1159	421	2575	966
III.	Linseed-cake meal	2240	672	2427	597
IV.	Barley-bran.	1657	590	5965	1120
V.	Oats, crushed	506 } 1035	286 } 475	2571 } 5953	392 } 571
	Maize, ground	529	189	3382	179

TABLE V.—FOOD CONSTITUENTS OF STRAW CONSUMED.

Lot.	Crude protein.	Oil.	Carbohydrates.	Woody fibre.
	lb.	lb.	lb.	lb.
I.	337	352	4120	2541
II.	332	346	4075	2501
III.	395	413	4857	2981
IV.	360	376	4421	2714
V.	313	328	3851	2364

It is seen as regards the crude protein, which includes all the nitrogenous matter considered as albuminoids (got by multiplying the total nitrogen in the fodder by 6·3), that the quantities contained in the by-fodders of the different lots differed very greatly, and in a scarcely less degree did the other food constituents. In the case of the straw the differences are comparatively slight, for they vary only in proportion to the amount of straw consumed.

The turnips used were Aberdeen yellows of the following composition:—

	Fresh.	Calculated as dry.
Moisture	92·73	...
Albuminoids	·54	7·44
Amides	·56	7·65
Oil	·10	1·38
* Carbohydrates, &c.	4·31	59·33
Woody fibre	·96	13·15
Ash	·80	11·05
	100·00	100·00
* Containing sugar	4·05	55·70

This analysis shows that the turnips grown that season were of poor quality. They contained about 2 per cent more water than Aberdeen yellows usually do, and were not well matured, as shown by the very large proportion of nitrogenous matter of the amide kind, which, with more sun and better weather conditions, would have been in great measure converted into albuminoids.

The total dry matter in those turnips was only 7·26 per cent, so that in the 50 lb. per head per day the solids amounted to only 3·63 lb. The turnips were analysed at the end of January, in the middle of the feeding period, so that the analysis might represent the average quality of the turnips consumed. I think it probable that the daily ration of turnips might with advantage have been raised to 60 lb. per head, or as much more as was compatible with the consumption of the whole of the by-fooder. The daily amount was restricted to 50 lb., in order that the cattle might be able to consume the whole of the 10 lb. of barley-bran, which formed the gauge of the other by-fodders.

The increase in live-weight over the whole 40 cattle was only about 1¼ lb. per day, which, even for beasts in fairly good condition, is below what would be expected of good feeders. The inferior quality, and perhaps also the restricted quantity, of the turnips consumed is partly responsible for that result. It is not improbable that with a more liberal allowance of succulent turnips the cattle might have also consumed more straw, and with the increased amount of organic matter consumed daily they might have been able to make 2 lb. per day of live-weight increase, as cattle of that size are expected to do.

While that limited quantity of food consumed powerfully affects the total increase in live-weight, it does not, except in a minor degree, affect the question of relative increase which is here under investigation.

The relative progress of the various lots is so distinctly different as to yield the information for which the experiment was instituted, for these differences are due to the different feeding value of the by-fodders which bulked so largely in the daily rations. Of course it may reasonably be argued that if the cattle had eaten a larger amount of turnips or of straw, or of both combined, the relative efficiency of the different by-fodders might have been different. The fact is we can scarcely affect the general food of an animal in any way without affecting thereby in some way the efficiency of the by-fodder; but we must leave it to future experiments to modify the feeding in such ways as to meet any objections of that kind.

The total amounts of food constituents contained in the 56,000 lb. of turnips consumed by each lot during the 112 days were:—

	lb.
Albumen	303
Amides, &c.	313
Oil	56
Carbohydrates	2414
Woody fibre	537
	3623

In estimating the feeding value of that amount of food material, we are confronted with the difficulty of not knowing how to reckon the feeding value of that half of the nitrogenous matter which is not albumen but other nitrogenous bodies. The custom hitherto has been to group all the nitrogenous matters together, and for that purpose those amides, &c., are in the analyses and in the above total quantities reckoned as albumen.

As it happens, the total amount of nitrogenous matter of a non-albuminoid kind in the restricted quantity of turnips used is small in comparison with that contained in the concentrated fodders employed; and as the quantity of turnip-amides consumed by all the lots was the same, we have only to keep it in remembrance so as to prevent any misconception in comparing the final results.

The total nitrogenous matter contained in the turnips consumed by each lot is therefore assumed to be 716 lb. of albumen.

On Table VI. is shown the entire amount of the food consumed by each lot. On the last column is shown the total organic matter consumed per head per day, which is seen to range between 16 lb. and 18 lb. or less. That is considerably below what cattle rising two years old are expected to consume, and are required to consume, in order to make rapid progress.

TABLE VI.—Entire Food Constituents Consumed.

Lot.	Crude albuminoids.	Oil.	Carbo-hydrates.	Woody fibre.	Total organic matter.	Organic matter per head per day.
	lb.	lb.	lb.	lb.	lb.	
I.	4417	1506	8,162	3725	17,810	15·9
II.	3839	1372	9,878	4328	19,417	17·3
III.	3251	1141	9,698	4115	18,205	16·2
IV.	2633	1022	12,800	4371	19,826	17·7
V.	1964	859	12,218	3472	18,513	16·6

As, however, it is not the total amount of organic matter contained in the fodder, but the total amount of that which is digestible, which determines its feeding value, regard must be had to the digestible constituents of the foods consumed. The digestibility of the feeding-stuffs used in respect of each of their food constituents is by no means a definite quantity. It is found to vary according to a variety of circumstances. The coefficients of digestibility selected for the constituents of these feeding-stuffs are based upon those given in Professor Wolff's tables, and from artificial digestion with pepsin according to Stutzer's method, and controlled by analyses of the dung which were made weekly during the whole course of the experiment. The coefficients of digestibility of the constituents of the turnips are those ascertained in former experiments at Mains of Laithers in 1891.

COEFFICIENTS OF DIGESTIBILITY OF FODDER CONSTITUENTS.

	Albuminoids.	Oil.	Carbohydrates.	Woody fibre.
	Per cent.	Per cent.	Per cent.	Per cent.
Decorticated cotton-cake	85	80	95	...
Linseed-cake	86	90	80	50
Dried grains	72	84	67	42
Barley-bran	78	80	80	40
Oats	80	90	80	30
Maize	75	90	95	80
Turnips	60	90	94	90
Oat-straw	50	50	45	60

On Table VII. (see p. 166) are given the total amount of digestible matters in the concentrated fodders, and on Table VIII. those in the straw, and on Table IX. are given the digestible constituents in the entire fodder consumed by each lot, from which are calculated the amounts of digestible fodder eaten per head per day of each lot, and the nutrient ratio. On this table is clearly shown the whole drift of the experiment.

Lot I. received a highly nitrogenous dietary, in which each animal digested about 3 lb. of albumen daily and about 1 lb. of oil. These are the two constituents most prized in a feeding-stuff, being those that are most deficient in straw; and it is to make up that deficiency and to enable more straw to be consumed with advantage that oilcakes are chiefly bought in.

The quantity of oil digested by Lot I. is more than experience has found to be profitable. It was not intended that Lot I. should receive so much oil, but the only decorticated cotton-cake available happened to be richer than usual in that ingredient, and it will be seen from the analysis of the oat-straw that it also contains an amount of oil far above average. So far as the straw is concerned that which is called oil is really all that is extracted by ether, including chlorophyll and waxy matter inferior to oil in feeding value. These matters are, however, only feebly digested, and they scarcely affect the accuracy of the figures indicating the total oil digested. The disappointing part of the record of Lot I. is the small amounts of carbohydrates and woody fibre digested. This is of course due to the small amount of straw consumed, and owing to this circumstance the proportion of non-albuminoid to albuminoid matter in the fodders is much smaller than it should have been, as seen in the middle column of the table showing the *nutrient ratios* of the different dietaries.

The nutrient ratio of the fodder of Lot I. is only 1 to 3—a very narrow ratio for an entire dietary, and about the same as

TABLE VII.—Digestible Constituents of Concentrated Fodders consumed.

Lot.		Albumen.	Oil.	Carbo-hydrates.	Woody fibre.
		lb.	lb.	lb.	lb.
I.	Decorticated cotton-cake meal	2944	878	1546	...
II.	Decorticated cotton-cake meal . . . . Dried grains . . .	1472 834 } 2306	439 354 } 793	734 1722 } 2456	... 406 } 406
III.	Linseed-cake meal . .	1926	605	1941	298
IV.	Barley-bran . . .	1292	472	4772	336
V.	Oats . . . . Maize	405 326 } 731	257 214 } 471	2056 2400 } 4456	117 116 } 233

TABLE VIII.—Digestible Constituents of Oat-Straw.

Lot.	Crude albuminoids.	Oil.	Carbo-hydrates.	Woody fibre.
	lb.	lb.	lb.	lb.
I.	168	176	1854	1524
II.	166	173	1833	1500
III.	197	206	2186	1789
IV.	180	188	1990	1628
V.	156	164	1733	1418

Digestible Constituents of Turnips.

Lot.	Crude albuminoids.	Oil.	Carbo-hydrates.	Woody fibre.
I. II. III. IV. V.	} 370	50	2270	480

TABLE IX.—Summary of Results of Feeding Experiment.

	Entire food constituents digested.				Nutrient ratio.	Food digested per head per day.					Increase per head per day.
Lot.	Albumen.	Oil.	Carbo-hydrates.	Woody fibre.		Total organic matter.	Albumen.	Oil.	Carbo-hydrates.	Woody fibre.	
	lb.	lb.	lb.	lb.		lb.	lb.	lb.	lb.	lb.	lb.
I.	3481	1104	5607	2004	1 : 3	10·9	3·1	1·00	5·0	1·8	1·11
II.	2841	1016	6560	2386	1 : 4	11·4	2·5	·90	6·0	2·0	1·33
III.	2492	861	6397	2567	1 : 4·5	11·0	2·2	·76	5·7	2·3	1·20
IV.	1841	710	9032	2444	1 : 7·4	12·5	1·6	·64	8·1	2·2	1·42
V.	1257	690	8459	2131	1 : 10	11·2	1·1	·61	7·6	1·9	1·26

would occur in young clover-grass. With a daily fodder of so concentrated a kind we should expect the cattle to make great progress if the fodder were such as to suit them, and if they ate enough of it. During the first month they did very well on it, and increased at the rate of fully 2 lb. per head per day; but in the second month their appetites fell away, they ate a great deal less straw, and they made almost no progress. Nos. 7 and 10 lost ground, and No. 4 went off his feed altogether. Next month they began to pick up again, but evidently the dietary was not a suitable one, for this lot while feeding on what would be considered the most potent of the five dietaries made least progress of all.

We must ask, What was the cause of this failure? They consumed only 15·9 lb. per head per day of dry organic matter, but cattle of about 1000 lb. weight can consume about half as much again. Was it because the ratio was too narrow? The cattle had it in their power to widen the ratio by eating more of the straw, which had a ratio of at least 1 : 20, but they ate less straw than Lots III. and IV. Was it because the oil was too abundant? That may have been so, but we find that Lot II., which had rather less oil, consumed even less straw, and Lot III., which consumed daily ¾ lb. oil, consumed more straw than any other lot, while Lot V., which consumed least oil of any, also ate least straw. Nevertheless it may well be that the extra ¼ lb. of oil which that lot had over Lot III. had blunted their appetite, and it will be seen when comparing the dung of the different lots that a large part of the oil given to Lot I. was not digested.

When half of the decorticated cotton-cake was replaced by an equal value of dried brewers' grains—viz., Lot II.—a marked improvement took place—an increase of nearly ¼ lb. per day of live weight. The nutrient ratio of the food was now 1 to 4, which is still a very close ratio. The widening of the ratio was due to the comparatively wide ratio of the grains and not to the straw, of which Lot II. consumed less than Lot I. Why did this lot not consume more straw? The total amount of dry organic matter they consumed daily was only 17·3 lb. per head. Cattle of their weight might easily have consumed 6 lb. more. They consumed only ·4 lb. of dry organic matter more than Lot I., but they digested ·5 lb. more, showing that their diet was slightly more digestible.

Lot III. is in some respects the most disappointing lot of all. They consumed less total dry organic matter in their food than Lot II., although they consumed more straw than any of the others. The nutrient ratio of their food was slightly wider than that of Lot II.—viz., 1 : 4·5—still a narrow ratio, and though they consumed and digested less oil than Lot II., they did not digest any more carbohydrates and woody fibre.

Lot IV., whose by-fodder was barley-bran, did best of all, thus confirming the results of the experiments of the previous year. The total amount of organic matter consumed per head daily—viz., 17·7 lb.—was only 0·4 lb. more than that consumed by Lot II.; but they digested 1·6 lb. more organic matter daily, and made about a tenth of a pound more increase. The nutrient ratio in their case was rather a wide one—viz., 1 : 7·4. The amount of albumen digested by them daily was only 1·6 lb., which is just about half of that digested by Lot I., also the amount of fat digested by them was not much more than half that digested by Lot I.; but despite the less nitrogenous character of their by-fodder, they ate more straw than Lot I. and Lot II., and digested better the non-nitrogenous part of their fodder.

Lot V. consumed a comparatively poor diet with the wide ratio of 1 to 10, and on that account it is not surprising that they consumed less straw than any of the other lots.

In determining the relative value of fodders, it is necessary to have regard not only to the progress made by the stock consuming the fodders, but also to the character of the dung which is produced by their consumption. With so many cattle under one roof it was found impracticable to keep the dung of each lot separate and to convert it into made dung on an agricultural scale; but as there are at Mains of Laithers prepared stalls with sparred floors, underneath which are trays for catching the dung and urine of steers separately, it was resolved to make use of these, and to put a pair of steers into these stalls for a week at a time from each lot in succession. Thus in five weeks each of the five lots had had a pair of steers under control. The same pair of steers from each lot was used for control purposes on each occasion. The animals were weighed before going into the sparred stalls, and again at the end of the week when leaving. In the meantime their dung and urine were collected and weighed daily, and a fair sample of each was sent weekly to be analysed.

It was hoped by this means that a considerable amount of information would be gathered regarding the use made of the food eaten by the different lots, and the digestibility of the various constituents of their fodder.

The results of these observations are given on Table XV., and they may be summarised very shortly. In the first place, it will be seen that during the week of confinement on the sparred floors the animals usually lost weight. There was no diminution in their appetite, nor did they go back in condition so far as that could be judged both by observation and by the results of their monthly weighing; but owing probably to the diminished comfort of the stall and the slight amount of nervous excitement involved in the changed condition of their circumstances, their evacuations were somewhat increased. The slightly more costive or more relaxed state of the bowels of animals whose normal dejections amount to from 30 lb. to 45 lb. per day is quite sufficient to account for the deficiency noticed in the live-weight of the animals under control. Moreover, the quantity of solids voided per week by the selected pairs are not quite in exact ratio with the total food consumed, although Lot IV. still takes the lead. The amount of dung will of course vary not only directly according to the amount of food consumed, but inversely according to the amount digested. It will also be seen that the amount of urine voided is not in direct proportion to the amount of water drunk. That is of course what must be expected, for it depends in great measure on the amount of water vapour set free by the skin and by the lungs, and in that respect animals differ very much. Former experiments have very clearly demonstrated that the results obtained from one or two animals have to be read with very great caution, and these data are an additional confirmation of the fact. The object in view in putting pairs of each lot under control was not for the purpose of noting the quantity but the quality of the dung. In this respect it will be found that Table XVI., containing the analyses of the solids voided in each case, gives important information.

The last column of the table, giving the amount of water in the dung, shows that upon the whole it was remarkably constant. The wettest dung was that produced by Lot III. eating linseed-cake meal, and the driest was that produced by Lot V. eating oats and maize; and that is what we should expect from the well-known effects of these feeding-stuffs. In the first column is given the percentage of albumen in the dungs; and remembering that the albumen and other food-constituents contained in the dung are the amounts of these materials that have escaped digestion, the importance of the data provided by these columns is evident. We see that the dung that is richest in albumen is that of Lot V.—a most remarkable result, for this was the lot that consumed the smallest amount of albumen and whose dietary had the widest ratio. If we examine the details, we see that this high result is chiefly owing to the high percentage of albumen in the dung voided during the second week in which they were in the sparred stalls. On referring to the former table (XV.) it is seen that during that week (the week ending February 6) they were 46 lb. lighter when they came off the sparred stall than when they went on it, and it seems as if something had occurred to interfere with their normal condition. But while that may be, it is more than probable that we have in this result a proof that the albuminoid part of their food has not been so well digested as in the case of the other fodders. Had this lot been fed on whole grain it would have been natural to expect that some unbroken grains might have escaped mastication and passed through the alimentary tract, but in this case the oats were bruised and the maize ground into meal. The lot that made the best use of the albumen of their food was Lot IV. fed on barley-bran. Their dung was low not only in albumen but also in the soluble nitrogenous matter of the dung classified as amides in the table, but reckoned as albumen. The total nitrogen of the dung reckoned as albumen for all the lots is as follows:—

Lot.	Per cent.	Lot.	Per cent.
I.	13·87	IV.	10·00
II.	13·66	V.	13·72
III.	11·81		

The only one of these which is out of its order is Lot V., which should have been the lowest of all, and it is because it is so far out of its normal place that we are forced to conclude that the nitrogenous constituents of its by-fodder have not been so well digested as have been those of the other lots.

The anomalous composition of the dung of Lot V. on February 9 has its counterpart in that of Lot III. of March 20.

The two cattle seem during this week to have digested the albumen and other nitrogenous matter of the linseed-cake so well as to leave a very small percentage in their dung. On referring to Table XV. we see that during that week, though they parted with the normal quantity of dung, they gained 55 lb. in live-weight.

Coming next to the third column of Table XVI., showing the percentage of oil contained in the dungs, we find results that ought to arrest the attention of feeders. The percentage of oil in the dung increases very rapidly according as the fodder contains more of that constituent, so that according as more oil is contained in the fodder, after a certain favourable amount is reached, the less of it is assimilated. We see this very clearly in comparing the amounts of oil eaten with the proportion contained in the dung of each lot.

Lot.	Oil consumed.	Percentage of oil in dung.
I.	1506	5·57
II.	1373	3·73
III.	1141	3·77
IV.	1022	2·23
V.	859	3·86

From these figures we see, in the first place, that much of the oil that was given to Lot I. has been thrown away. It has in great measure appeared again in the dung, and as it possesses no manurial value, but rather retards the manurial efficacy of dung than otherwise, it is wasteful to give it to cattle in such quantities as was contained in the fodder of that lot. Moreover, we see from this that the digestibility of cotton-seed oil depends not only on its nature but on the quantity consumed daily. The co-efficient of digestibility assigned to it is somewhat between 90 and 100 per cent, but in this experiment I have put it down at 80 per cent, and probably 70 per cent would have been nearer the mark. With regard to the other food-constituents, the carbohydrates and the woody fibre, the only thing that calls for special attention is the relatively large proportion of the latter constituent, showing that the woody fibre in the straw of that year was not so digestible as usual.

That the dung of Lot V., consuming ground oats and maize, contained so high a percentage of oil as well as of nitrogen shows that the by-fodder of that Lot as a whole was not well digested. I think it probable that the oats, and especially the maize, had not been ground so very finely as is necessary when these grains are given to cattle.

An opinion prevails that Irish-bred cattle consume a larger quantity of food than polled cattle. In this experiment the quantity of turnips and concentrated fodders given to each of the breeds was the same, so that any excess of appetite would result in a larger consumption of straw. Forty of the cattle consisted of Irish-bred shorthorn crosses, and ten were home-bred polled crosses. In the middle period of the experiment the average weight of the Irish-bred was 1010 lb., and the polled cross 996 lb. The daily consumption of straw by the Irish-bred was 8·80 lb. per day, by the polled crosses 8·55 lb. per day, but as the Irish scaled 14 lb. each more, their consumption in proportion to live weight averaged only 2½ oz. daily, or just 1 lb. per week more. So far then as this experiment shows, there is practically no difference in food-consuming capacity between Irish and polled *cross* cattle. The average increase in live weight of the Irish cattle was 1·27 lb. and of the home-bred 1·14 per day.

Reviewing the whole experiment, it would seem that the following general conclusions may be drawn:—

The cattle as a whole have not made so great an increase of weight as cattle can be made to make; but it must be remembered that the daily increase in weight of cattle depends on a variety of circumstances, not the least important of which is the kind of condition they were in at starting. The cattle in this experiment were not lean beasts to begin with. They had been well done by for a year before the experiment began, and cattle of that kind cannot easily be made to increase more than 1½ to 2 lb. per head per day.

Over all, the increase in live-weight has been 1¼ lb. per head per day. Half-a-dozen were poor feeders who made less than 1 lb. increase per day. Two made more than 2 lb. per day, and as it happens, the one that made greatest progress was in the lot that gained least—viz., heifer No. 4 of Lot V. This shows that it is of more importance to have a good feeding animal than to have specially good fodder to feed it on, and that even with the best food there may be bad feeders.

That the cattle all over did not make greater progress was due in great measure to the inferior feeding quality of the turnips, and probably to the inferior quality of the straw. In the case of both turnips and straw only half of the nitrogenous matter was in the form of albuminoids, and evidently the straw was not of an appetising kind, for the cattle consumed less than was expected of them.

Rapid progress, however, was not the aim of the experiment, for that depends in the first place on the quality of the turnips and straw, of which the great bulk of the fodder consists, and that was the part of the fodder incident to the farm, and it was the part which was common to all.

The matter under experiment was the concentrated or by-fodders, and these were given at an equal price per head and of widely different composition.

The results show that the market prices of the feeding-stuffs used are not in harmony with the feeding value—at least when consumed by cattle; that linseed-cake, which is the most popular of the feeding-stuffs, is also the dearest; that a mixture of decorticated cotton-cake meal and brewers' grains is more economical, and that barley-bran is more economical still.

As regards the quality of the fodder as shown by the nutrient ratio, the experiment shows that in this case both the very narrow ratio and the wide one were not economical, that the moderate ratios did best, but that within a moderate range there seems to be no absolute agreement between nutrient ratio and feeding progress.

So far as feeding progress is concerned, it is not the nutrient ratio that has determined the success of the fodder, it is rather the total amount of digestible fodder consumed. It would therefore seem that for feeding progress the first thing required is an animal of a good feeding kind; the second is to provide it with fodder of an appetising kind, so that it may consume as large a quantity of it as possible; and only in the third place is it necessary to have regard to the nutrient ratio, but it does not seem that the ratio most advantageous for feeding progress is capable of being so exactly defined as has been customarily taught from the results of feeding experiments conducted on the Continent.

TABLE X.—Lot I. Cattle Fed at Mains of Laithers, Turriff, December 19, 1895, to April 9, 1896.

Decorticated Cotton-Cake Meal, 7¼ lb. ; *Pulped Yellow Turnips*, 50 lb. ; *Oat-Straw*, ad libitum.

	No.	Dec. 19.			Jan. 16.			Feb. 13.			March 12.			April 9.			112 days Increase.	Straw consumed.				
																		28 days to Jan. 16.	Feb. 13.	March 12.	April 9.	Total Straw.
		cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Steer . .	1	8	0	2	8	0	19	8	1	20	8	2	23	9	0	0	110	385½	429	480	449½	1744
" . .	2	8	2	10	8	3	6	9	1	10	9	3	10	10	0	7	165					
" . .	3	8	3	0	9	1	17	9	1	26	9	1	24	9	2	12	96	583½	465	482	500	2030½
" . .	4		...			...			...			...			...		124					
Heifer .	5	8	1	18	8	3	0	8	3	4	9	0	5	9	1	4	98	560½	474½	489	537½	2061½
" .	6	8	1	26	8	3	25	9	0	10	9	1	9	9	2	14	128					
" .	7	9	0	11	9	3	5	9	3	14	10	0	23	10	1	22	151	499½	390	534	524	1947½
" .	8	8	2	14	9	0	16	8	3	16	9	1	23	9	3	7	133					
Steer, polled	9	7	3	0	8	1	0	8	1	0	8	2	7	8	3	2	*114	492	404½	410½	427½	1734½
" polled	10	7	3	7	8	3	20	8	2	14	8	2	11	8	3	18	*123					
Weights of lot .		83	0	4	88	0	20	88	2	16	91	1	14	93	2	21	+1193	2521	2163	2395½	2438½	9518
Increase of lot .							+576			+52			+306			+259						

* Fed in sparred stall during weeks ending January 24, February 27, and April 14.

TABLE XI.—LOT II. CATTLE FED AT MAINS OF LAITHERS, TURRIFF, DECEMBER 19, 1895, TO APRIL 9, 1896.

Dried Brewery Grains, $5\frac{3}{4}$ lb.; *Decorticated Cotton-Cake Meal*, $3\frac{10}{16}$ lb.; *Pulped Yellow Turnips*, 50 lb. *daily*; *Oat-Straw*, ad libitum.

	No.	Dec. 19.			Jan. 16.			Feb. 13.			March 12.			April 9.			112 days Increase.	Straw consumed. 28 days to Jan. 16.	Feb. 13.	March 12.	April 9.	Total Straw.
		cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Steer, polled	1	7	3	2	8	1	22	8	3	10	9	1	9	9	2	4	198	406¾	479	469½	406½	1761¾
" polled	2	7	1	18	7	3	14	8	0	14	8	1	7	8	2	6	128					
" . .	3	8	3	3	9	0	24	9	1	19	9	3	0	10	0	4	141	467	480½	570½	634½	2152½
" . .	4	9	2	18	10	1	18	10	1	24	10	3	6	11	1	8	186					
" . .	5	9	2	6	10	0	2	10	0	16	10	2	3	10	3	7	*141	477¼	438	417½	484½	1817¼
" . .	6	8	3	14	9	1	4	9	1	28	9	3	4	9	3	18	*116					
Heifer .	7	6	3	0	7	0	1	7	1	7	7	2	15	7	3	18	130	440	392½	412	418	1662½
" .	8	8	0	22	8	2	25	8	3	21	9	1	3	9	2	6	152					
" .	9	8	0	17	8	3	6	9	0	14	9	1	14	9	2	25	176	520½	441	514	500	1975½
" .	10	8	3	12	9	1	11	9	1	22	9	2	22	9	3	19	119					
Weights of lot .		84	0	0	89	0	25	91	1	7	94	1	27	97	1	3		2311½	2231	2383½	2443½	9369½
Increase of lot .							+585			+234			+356			+312	+1487					

* Fed in sparred stall during weeks ending January 31, March 5, and April 9.

TABLE XII.—LOT III. CATTLE FED AT MAINS OF LAITHERS, TURRIFF, DECEMBER 19, 1895, TO APRIL 9, 1896.

Harburg Linseed-Cake Meal, 6⅔ lb.; *Pulped Yellow Turnips*, 50 lb.; *and Oat-Straw*, ad libitum.

	No	Dec. 19.			Jan. 16.			Feb. 13.			March 12.			April 9.			112 days Increase.	Straw consumed.				
																		28 days to Jan. 16.	Feb. 13.	March 12.	April 9.	Total Straw.
		cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Steer, polled	1	8	1	18	9	0	3	9	0	6	8	3	22	9	0	17	83	571½	562½	542	579½	2,255½
" polled	2	8	2	1	8	3	21	9	0	17	9	1	22	9	3	6	145					
" . .	3	8	0	21	8	1	18	8	2	15	8	3	21	9	1	13	*132	563	533	570½	581	2,247½
" . .	4	8	2	5	9	0	6	9	1	24	9	2	12	9	3	19	*154					
" . .	5	8	3	15	9	1	21	9	3	21	10	0	22	10	1	14	167	529½	537½	661½	628	2,356½
" . .	6	8	0	20	8	0	17	8	2	7	9	0	7	9	1	10	130					
Heifer .	7	8	0	22	8	2	15	8	3	17	9	0	4	9	1	10	128	540½	513½	576½	568½	2,199
" .	8	8	0	7	8	2	0	8	3	6	8	3	12	9	0	13	118					
" .	9	6	3	24	7	2	0	7	2	23	8	0	2	8	0	7	123	534½	459½	591	523	2,108
" .	10	8	2	26	9	1	14	9	1	10	9	3	16	10	0	19	161					
Weights of lot .		82	2	19	87	0	3	89	2	6	92	0	0	94	2	16	1341	2739	2606	2941½	2880	11,166½
Increase of lot .							+488			+283			+274			+296						

* Fed in sparred stall during weeks ending January 16, February 13, and March 20.

TABLE XIII.—LOT IV. CATTLE FED AT MAINS OF LAITHERS, TURRIFF, DECEMBER 19, 1895, TO APRIL 9, 1896.

Barley-Bran, 10 lb.; *Pulped Yellow Turnips*, 50 lb.; *Oat-Straw*, ad libitum.

	No.	Dec. 19.			Jan. 16.			Feb. 13.			March 12.			April 9.			112 days Increase.	Straw consumed.				
																		28 days to Jan. 16.	Feb. 13.	March 12.	April 9.	Total Straw.
		cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Heifer . .	1	7	3	2	8	2	9	8	3	11	9	0	22	9	2	5	199	490½	464	521	561½	2,037
" . .	2	7	2	20	8	0	17	8	1	0	8	2	4	9	0	17	165					
" . .	3	7	2	13	7	3	22	8	1	0	8	2	17	8	3	14	141	445	421	459½	474	1,799½
" . .	4	7	2	10	8	0	20	8	1	14	8	2	14	9	0	3	161					
Steer . .	5	8	1	19	8	2	24	9	0	0	9	1	16	9	2	24	145	479½	497	524½	546½	2,047½
" . .	6	8	3	3	9	1	0	9	2	0	9	3	22	10	0	9	*146					
" . .	7	9	1	11	9	3	24	10	0	25	10	1	25	10	3	19	*176	486¾	505½	598½	609	2,199¾
" . .	8	8	3	25	8	2	15	8	3	21	9	1	11	9	3	3	90					
" polled	9	8	3	0	9	0	21	9	3	26	10	1	18	10	3	0	224	465½	496½	572	546½	2,080½
" polled	10	8	2	10	8	2	10	8	3	16	9	2	15	9	3	19	149					
Weights of lot .		83	2	1	87	0	22	90	1	1	94	0	24	97	3	1	1596	2367	2384	2675½	2737½	10,164¼
Increase of lot .							+413			+343			+443			+397						

* Fed in sparred stall during weeks ending January 2, February 20, and March 27.

TABLE XIV.—LOT V. CATTLE FED AT MAINS OF LAITHERS, TURRIFF, DECEMBER 19, 1895, TO APRIL 9, 1896.

Bruised Oats, 4 lb.; *Ground Maize*, 4½ lb.; *Pulped Yellow Turnips*, 50 lb.; *Oat-Straw*, ad libitum.

	No.	Dec. 19.			Jan. 16.			Feb. 13.			March 12.			April 9.			112 days Increase.	Straw consumed.				
																		28 days to Jan. 16.	Feb. 13.	March 12.	April 9.	Total Straw.
		cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	cwt.	qr.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
Heifer . .	1	9	0	9	9	2	16	9	3	6	10	0	25	10	1	23	154	471	451	530¾	547	1999¾
" . .	2	7	2	7	8	0	7	8	1	13	8	2	13	8	3	15	148					
" . .	3	7	3	9	8	0	0	8	1	2	8	2	3	8	3	11	114	466	486	511	526	1989
" . .	4	7	3	11	8	2	8	9	0	21	9	2	0	9	3	16	229					
Steer . .	5	8	1	21	8	3	19	9	1	9	9	2	3	9	2	18	*137	400	325	365½	394½	1485
" . .	6	8	3	19	9	1	14	9	3	10	10	0	14	10	2	0	177					
" polled	7	8	3	2	9	1	6	9	3	4	9	3	6	9	3	16	126	422½	471½	434	416	1744
" polled	8	8	3	15	9	0	17	9	1	2	9	2	20	9	2	17	86					
" . .	9	7	0	16	7	0	18	7	0	14	7	1	21	7	3	13	81	359½	417½	434½	424½	1635½
" . .	10	8	0	12	8	2	5	9	0	3	9	1	14	9	2	9	*165					
Weights of lot .		82	2	9	86	2	26	90	0	0	92	3	7	95	0	26	1417	2119	2150½	2275¾	2308	8853¼
Increase of lot .						+465			+366			+315			+271							

* Fed in sparred stall during weeks ending January 9, February 6, and March 12.

TABLE XV.—Results obtained from Pairs of Cattle in Sparred Stalls (a Week at a time).

	No.	Loss or gain of weight.	Dung.	Urine.	Water.	Straw.
Lot I.—*Decorticated Cotton-Cake.*						
		lb.	lb.	lb.	lb.	lb.
January 24 . .	3	−1	310	154	...	100
	4	+18	291	135	...	
February 27 . .	9	−10	224	152	48	124
	10	+14	225	55	94	
April 4 . . .	9	−4	196	129	91	106
	10	+10	223	170	111	
Average . .		+4½	247	132	...	110
Lot II.—*Decorticated Cotton-Cake and Grains.*						
January 31 . .	5	−2	268	80	...	103
	6	−14	242	111	...	
March 5 . .	5	−24	338	73	99	136
	6	+3	258	131	87	
April 9 . . .	5	−11	252	121	82	116
	6	−17	222	98	40	
Average . .		−11	263	102	...	109
Lot III.—*Linseed-Cake.*						
January 16 . .	3	−13	228	102	...	145
	4	−1	292	105	...	
February 13 . .	3	−30	310	92	77	123
	4	−4	268	116	143	
March 20 . .	3	+28	248	92	77	153
	4	+27	308	119	136	
Average . .		+1	276	104	...	140

TABLE XV.—RESULTS OBTAINED FROM PAIRS OF CATTLE IN SPARRED STALLS—*continued.*

	No.	Loss or gain of weight.	Dung.	Urine.	Water.	Straw.
LOT IV.—*Barley Bran.*						
		lb.	lb.	lb.	lb.	lb.
January 2 . .	6	−14	292	73	...	135
	7	−6	279	85	...	
February 20 . .	6	−23	303	82	78	138
	7	−7	263	93	47	
March 27 . .	6	+12	298	129	114	153
	7	+2	316	99	105	
Average . .		−6	292	93	...	142
LOT V.—*Oats and Maize.*						
January 9 . .	5	−9	183	53	...	87
	10	+5	184	56	...	
February 6 . .	5	−25	248	60	...	116
	10	−21	222	72	...	
March 12 . .	5	−6	226	77	40	106
	10	0	219	50	76	
Average . .		−9	214	61	...	103

TABLE XVI.—Analyses of Dungs of Selected Pairs of Cattle in Sparred Stall.

	Albumen.	Amides.	Oil.	Carbo-hydrates.	Woody Fibre.	Ash.	Water.
Lot I.—*Decorticated Cotton-Cake.*							
January 24 .	10·50	2·62	5·53	42·88	27·85	10·62	84·54
February 27 .	10·94	2·84	6·35	41·20	28·97	9·70	84·85
April 4 . .	10·50	4·16	4·82	42·63	26·57	11·32	81·82
Average	10·66	3·21	5·57	41·68	27·80	10·55	83·74
Lot II.—*Decorticated Cotton-Cake and Grains.*							
January 31 .	11·56	2·41	4·35	46·41	24·37	10·90	82·88
March 5 . .	10·50	2·62	3·55	46·93	23·90	12·50	83·80
April 9 . .	10·94	2·84	3·30	45·87	24·70	12·35	83·50
Average	11·00	2·66	3·73	46·40	24·32	11·92	83·40
Lot III.—*Linseed-Cake.*							
January 16 .	10·28	2·63	2·22	45·30	27·57	12·00	84·58
February 15 .	10·06	3·06	3·95	40·04	29·37	13·52	85·66
March 20 .	8·75	·66	5·15	46·04	26·95	12·54	85·64
Average	9·69	2·12	3·77	43·79	27·96	12·69	85·29
Lot IV.—*Barley-Bran.*							
January 2 .	8·53	1·10	2·80	48·45	27·77	11·35	83·42
February 20 .	9·19	1·31	2·00	48·06	29·62	9·82	83·57
March 27 .	7·87	1·97	1·90	48·84	28·87	10·55	83·27
Average	8·53	1·46	2·23	48·44	28·75	10·24	83·42
Lot V.—*Oats and Maize.*							
January 9 .	10·28	2·84	3·97	46·24	27·72	8·95	81·39
February 7 .	12·69	2·18	4·20	44·56	25·42	10·95	83·54
March 12 .	10·94	2·18	3·42	48·96	23·85	10·65	83·45
Average	11·32	2·40	3·86	46·60	26·00	10·18	82·79

FEEDING EXPERIMENTS WITH SHEEP CONDUCTED AT FERNEY CASTLE AND AT WHITELAW, 1896.

By Dr A. P. Aitken.

An experiment similar to the foregoing, in which sheep were used instead of cattle, was conducted by Mr Adam Logan, Ferney Castle, Reston, and Mr A. G. Spence, Whitelaw, Edrom.

It was originally intended that these should be exact duplicates of the experiment with cattle at Mains of Laithers, but it was found necessary to make several modifications. The sheep were folded on the turnip break at both farms. Each lot consisted of ten hoggs, and they were fed ten in a pen of one-eighth acre area. It was considered unsafe to give hoggs fed in that way a by-fodder consisting of decorticated cotton-cake alone, owing to the liability of some members of the lot to take far more than their share, and to suffer therefrom. Accordingly the decorticated cotton-cake lot, corresponding to Lot I. at Mains of Laithers, was abandoned, and the experiment was confined to four lots of ten each, fed in the same way as Lots II., III., IV., and V. at Mains of Laithers. The experiment had not gone on for a fortnight when it was found at both farms that the lot to which barley-bran was given as a by-fodder refused to eat it. That fodder had therefore to be abandoned, and brewers' grains was substituted for it. Moreover, it was found that the sheep ate very little of the hay that was given *ad libitum*, and on that account the turnips, which during the first month were restricted as in the cattle experiment to 50 lb. per 1000 lb. live-weight per day, were given in full measure, or nearly as much as the sheep could eat.

The shape which the experiment took after the first fortnight was as follows per lot per day:—

Lot.		lb.
II.	Dried brewers' grains	5$\frac{3}{4}$
	Decorticated cotton-cake	3$\frac{10}{16}$
III.	Linseed-cake	6$\frac{2}{3}$
IV.	Dried brewers' grains	11$\frac{1}{2}$
V.	Ground maize	4$\frac{1}{2}$
	Bruised oats	4

As regards Lots II., III., and V., they were precisely the same as the corresponding lots of the cattle experiment; while Lot IV. differed in having 11$\frac{1}{2}$ lb. of dried grains substituted for 10 lb. barley-bran. The fodders of all the lots were of the same money value according to the market prices ruling at the time.

The sheep used at Ferney Castle were selected from a lot of 50 secondary three-quarter bred hoggs which had been brought in three months previously, those of Mr Logan's own breeding having been sold. They were therefore not so evenly drawn as they would have been had there been a larger number to choose from. The sheep at Whitelaw were half-bred hoggs selected from a lot of sixty bought five months previously.

The lots were drawn on 16th January, but they did not get fairly settled down to their permanent diet till 7th February. The record therefore starts from that date; and it lasted sixty days at Ferney Castle and thirty-five days at Whitelaw. As a matter of fact, the experiment at Whitelaw was carried on a month longer, but the yellow turnips deteriorated to such an extent that the sheep did badly on them, and made no further progress.

The concentrated fodders consumed were the same at both farms, and they differed considerably in quality from those consumed by the cattle at Mains of Laithers. The following were their analyses:—

ANALYSES OF CONCENTRATED FODDERS CONSUMED BY SHEEP AT FERNEY CASTLE AND WHITELAW, PER CENT.

	Albumen.	Amides.	Oil.	Carbo-hydrates, &c.	Woody fibre.	Ash.	Water.
Decorticated cotton-cake .	44·19	...	11·42	20·37	7·20	7·42	9·40
Linseed-cake . . .	26·03	...	11·92	27·28	13·75	6·67	14·35
Dried brewers' grains .	16·62	2·63	4·70	44·43	16·85	4·25	10·52
Maize.	8·97	·22	4·98	67·51	2·90	1·05	14·37
Oats	8·82	·84	6·85	56·35	10·04	2·63	14·47

The turnips at the two farms had the following composition:—

	FERNEY CASTLE. Swedes.		WHITELAW. Yellows.	
	Fresh.	Calculated dry.	Fresh.	Calculated dry.
Moisture	89·49	...	89·02	...
Albuminoids	·48	4·59	·58	5·25
Amides	·46	4·38	·77	7·00
* Carbohydrates, &c. . .	7·89	75·03	7·18	65·40
Woody fibre	1·10	10·45	1·51	13·80
Ash	·58	5·55	·94	1·51
	100·00	100·00	100·00	100·00
* Containing sugar .	5·77	55·0	4·84	44·0

As compared with the corresponding fodders used in the cattle experiment, it will be seen that the decorticated cotton-cake contained 2 per cent less oil, while the linseed-cake contained 3 per cent more. The dried grains contained about 2 per cent less oil, and both the maize and oats were richer in that ingredient. These are very considerable differences, but considering that the total effect of the feeding experiment at the two sheep-farms are considerably at variance, it is out of the question to regard the differences of the constituents of the fodder with the view of instituting a comparison between the results of the cattle-feeding and the sheep-feeding experiments.

The amount of fodder consumed by the different lots of sheep at the two farms are shown on Tables I. and II., pp. 184, 185, also the live-weight of each sheep at the beginning and at the end of the experiment, and the individual and average increase per head in each lot.

At Ferney Castle the weights of the sheep contained in each lot were very far from uniform; and at Whitelaw there was also a greater diversity than is desirable in a feeding experiment where the same value of feeding-stuffs is employed, and where, therefore, no very great dissimilarity of progress is to be expected. It is evident that some of the sheep entered upon the experiment in a much more forward condition than others.

The effect of this is shown in the very anomalous increase of live-weight exhibited not only by individuals but by the different lots at the two farms.

So far as the live-weighings are concerned, the results at the two farms are about as completely at variance as it is possible for them to be, viz.:—

		Ferney Castle.	Whitelaw.
Lot.		lb.	lb.
II.	Decorticated cotton-cake and grains	22	10·3
III.	Linseed-cake	22	11·9
IV.	Dried grains	17·1	14·0
V.	Oats and maize . . .	14	10·3

The chief discrepancy is found in Lot IV., which was the best at Whitelaw and very backward at Ferney Castle. This discrepancy, however, is in great part explained by the fact that that lot at Ferney Castle could not be got to eat their full allowance of dried grains. They consumed only 9 lb. instead of 11½ lb. per day.

The backward state of Lot V. also is partly explained by the fact that that lot at Ferney Castle consumed 40 lb. per day less turnips than the other lots.

TABLE I.

SHEEP FED AT FERNEY CASTLE FROM FEB. 7 TO APRIL 8, 1896.

Total fodder consumed during the experiment—60 *days*.			Live-weight.					Dead-weight.
			Feb. 7.		April 8.		Increase.	
LOT II.—*Decorticated Cotton-Cake and Dried Brewers' Grains.*								
	lb.	No.	st.	lb.	st.	lb.	lb.	lb.
		1	6	11	8	8	25	61
		2	7	8	9	2	22	60
		3	6	13	9	2	31	66
Swedes	10,892	4	7	7	8	12	19	64
Decorticated cotton-cake, 265 lb. Brewers' grains . 470 lb.	735	5	7	11	9	8	25	69
		6	7	10	8	5	9	56
Hay	8	7	8	0	10	0	28	68
		8	6	11	9	1	32	60
		9	7	4	8	6	16	60
		10	7	8	8	7	13	61
Average . . .			7	6¼	8	13¼	22·0	62·0
LOT III.—*Linseed-Cake.*								
		1	6	13	8	12	27	66
		2	8	3	10	2	27	74
		3	...		...		...	...
Swedes	10,892	4	7	3	8	12	23	56
Linseed-cake	523	5	7	2	8	0	12	54
Hay	20	6	7	7	10	1	36	74
		7	7	10	9	2	20	67
		8	8	0	9	6	20	67
		9	5	9	6	4	9	37
		10	7	0	8	12	26	65
Average . . .			7	3	8	11	22·0	62·0
LOT IV.—*Brewers' Grains.*								
		1	8	1	9	11	24	69
		2	7	6	8	2	10	63
		3	7	1	8	7	20	59
Swedes	10,892	4	8	12	11	0	30	83
Dried brewers' grains . .	706	5	6	6	7	1	9	44
Hay	0	6	7	7	8	6	13	60
		7	7	13	8	13	14	64
		8	7	11	8	8	11	64
		9	6	13	8	0	15	58
		10	6	10	8	7	25	56
Average . . .			7	6½	8	9¾	17·1	62·0
LOT V.—*Maize and Oats.*								
		1	7	1	8	1	14	61
		2	7	11	9	8	25	73
		3	7	4	8	10	20	65
Swedes	8,892	4	6	5	7	12	21	56
Maize	353	5	7	10	9	0	18	63
Oats	314	6	7	2	7	11	9	55
Hay	15	7	7	5	7	6	1	51
		8	6	10	6	13	3	53
		9	8	5	10	0	23	71
		10	6	8	7	0	6	43
Average . . .			7	3	8	3	14·0	59·1

TABLE II.

SHEEP FED AT WHITELAW FROM FEB. 7 TO MARCH 13, 1896.

Total fodder consumed during the experiment—35 *days*.			Live-weight.			Dead-weight.
			Feb. 7.	Mar. 13.	Increase.	
LOT II.—*Decorticated Cotton-Cake and Dried Brewers' Grains.*						
		No.	st. lb.	st. lb.	lb.	lb.
		1	8 9	9 10	15	...
		2	7 10	8 9	13	66
	lb.	3	7 1	7 11	10	56
Turnips	5,250	4	7 4	8 2	12	59
Decorticated cotton-cake	201	5	7 5	7 11	6	59
Dried brewers' grains	126	6	8 3	8 9	6	61
Hay	15	7	8 0	8 4	4	59
		8	7 5	8 5	14	58
		9	6 4	6 13	9	51
		10	7 6	8 6	14	62
Average			7 6	8 3	10·3	59·0
LOT III.—*Linseed-Cake.*						
		1	7 12	9 0	16	69
		2	7 7	8 3	10	61
		3	6 11	7 10	13	55
Turnips	5,250	4	7 4	8 3	13	61
Linseed cake	233	5	7 3	8 1	12	61
Hay	15	6	8 4	9 6	16	70
		7	7 10	7 12	2	59
		8	6 13	8 1	16	58
		9	6 8	7 3	9	50
		10	7 8	8 6	12	63
Average			7 5	8 3	11·9	60·7
LOT IV.—*Dried Brewers' Grains.*						
		1	8 8	9 6	12	68
		2	7 8	8 5	11	65
		3	7 1	7 12	11	57
Turnips	5,250	4	7 7	8 11	18	65
Dried brewers' grains	402	5	7 6	8 9	17	59
Hay	15	6	...	...	...	...
		7	7 8	9 0	20	66
		8	7 1	7 9	8	53
		9	7 10	8 5	9	61
		10	7 10	8 12	16	68
Average			7 8	8 8	14·0	62·4
LOT V.—*Maize and Oats.*						
		1	8 1	9 2	15	71
		2	7 7	8 3	10	64
		3	7 0	7 11	11	62
Turnips	5,250	4	7 4	7 9	5	63
Maize	157	5	7 6	8 6	14	69
Oats	140	6	8 10	9 7	11	70
Hay	15	7	7 10	8 9	13	56
		8	6 10	6 12	2	47
		9	6 7	6 12	5	48
		10	8 0	9 3	17	59
Average			7 7	8 4	10·3	60·9

An examination of the live-weight increase of the individual sheep of each lot shows very wide differences—far greater than were observed in the case of the cattle. In almost every lot there are some that seem to have made almost no progress, and others that have progressed far above average. This might be accounted for in various ways. Confined as the sheep were within somewhat narrow bounds, it may be that the stronger members oppressed the weaker ones, and prevented them from obtaining their due proportion of the concentrated fodders.

In that case the greater increase of the stronger members would tend to compensate the deficiency of the others. It will be noticed, however, that it is not always the lightest sheep that seem to have made least progress. In a few instances they appear to have done better than the rest, and while, as a rule, the heaviest to begin with increased more than the others, there are two instances in which the heaviest in the lot gained least. These may have been already fat when the experiment began, in which case no marked increase could be expected of them.

There is no doubt that in experimenting with sheep folded in the open air, there are elements of uncertainty that do not enter into a cattle experiment where the animals are stall-fed and under much more perfect control. The lots have to be changed on to different ground frequently, and the amount of exposure to weather will necessarily vary somewhat among the different lots. The greater or less amount of wool which they carry interferes a good deal with the accuracy of the determination of the increase of live-weight owing to the impossibility of having them in the same state of dampness at the periodic weighings; and in the case of sheep folded on the turnip break, the unequal amount of earth which adheres to the wool, according as it is longer or shorter, cannot but have a disturbing effect. Before the experiment in its permanent form began, the sheep at Whitelaw had the greater part of the earth clipped off them, and the difference of weight of individual sheep before and after the operation varied from 2 lb. to 9 lb. Another source of error which occurs even more prominently with sheep than with cattle is the very unequal amounts of the contents of the stomach and intestines that are apt to be retained in individual cases. All these circumstances point to the desirability of increasing the number of individuals in each lot from ten to twenty, and that has been resolved to be done in the further experiments now in progress.

Despite the marked differences that occur in the live-weight increase of the various lots at both farms, it is remarkable how slight are the differences in the dead-weight. That is the chief test of the value of a fodder, and the results of the experiment may be summarised in it. They are as follows:—

Lot.		Ferney Castle. lb.	Whitelaw. lb.
II.	Decorticated cotton-cake and grains	62	59
III.	Linseed-cake	62	60·7
IV.	Dried grains	62	62·4
V.	Oats and maize . . .	59·1	60·9

Strange to say, the great differences noted in the live-weight have disappeared in the dead-weight, and it is evident that in the weights of carcass we have a much more accurate index of the relative feeding value of the fodders than is presented by the live-weight increase. Unfortunately we cannot know what was the *condition* of the different lots as they entered on the experiment, and we are scarcely entitled to assume, in the case of small lots of ten each, somewhat unevenly drawn, that the carcass-weight at the beginning of the experiment would be approximately equal over all the four lots. Had the lots been evener, and composed of twenty each, that assumption might fairly have been made; but, in the circumstances, I think we are not entitled to draw any sharp conclusions as to the success of the feeding-stuffs employed from a comparison of the dead-weights at the conclusion of the experiment.

The most that can safely be said about the utility of the fodders is that, as tested by the sheep, there are no very marked differences observable.

The three-parts bred hoggets used at Ferney Castle looked larger and heavier than the half-bred hoggets at Whitelaw, and it was a surprise to those who had watched the experiment to find that the lots at both farms were nearly equal in carcass-weight. The greater amount of wool carried by the former would probably account for that to some extent.

The wool of the sheep at Ferney Castle was clipped and weighed separately, while the fleeces of the Whitelaw sheep were sold entire. Had Mr Spence weighed the wool it would probably have been found that it weighed a pound less per fleece than Mr Logan's.

I am informed that not only as regards wool, but also as regards tallow, the advantage would lie with the lots that had the greater proportion of Border Leicester blood.

Mr Logan had the wool and loose tallow of his sheep weighed separately, and has thus been able to supply an interesting item of information, for, as will be seen, these differed considerably in the different lots. They were as follows:—

Lot.		Loose tallow. lb.	Wool. lb.
II.	Decorticated cotton-cake and dried grains	56	78½
III.	Linseed-cake	59	78½
IV.	Dried grains	53	80
V.	Oats and maize	65	69
	Average . .	58	76½

The increased amount of loose tallow and the diminished amount of wool yielded by the lot fed on oats and maize is very marked, but it remains to be proved by this year's experiment whether this was due to what may be called accident or inherent in the feeding properties of the by-fodder.

NITRAGIN.

By Dr A. P. AITKEN.

THE name nitragin (pronounced *née-trag-éen*) has just been invented to describe a substance made in Germany, and protected by letters patent. It consists of a jelly on which there has been sown a minute organism derived from the little warty growths or nodules that make their appearance on the roots of leguminous plants. It is manufactured and sold by a chemical firm, Meister, Lucius, & Bruning, Höchst-am-Main, Germany, in little bottles containing an ounce or two of jelly on whose surface a white mould-looking substance has been grown. It is claimed by the manufacturers that this small speck of white fungus, if mixed with about half a gallon of water, and the water sprinkled carefully over about a hundredweight of earth, and thoroughly mixed with it, is capable of inoculating half an acre of land when spread over it as a top-dressing, and that land so inoculated will in most cases produce a much larger crop of clovers, peas, beans, or other leguminous plant, than uninoculated land. To those who are acquainted with micro-organisms, their extreme minuteness, their countless numbers, and the enormous rapidity of their multiplication, it ceases to be a wonder that it is possible, with a quantity of them weighing only a few grains, to inoculate and infect an acre of land. The discovery of this micro-organism and of its relation to a leguminous crop marks an epoch in the development of agricultural science, and the way in which such an organism can be cultivated and multiplied to any extent is one of the triumphs of bacteriology.

The invention of nitragin and its manufacture on an agricultural scale are a natural development and application of these discoveries; and as the introduction of this material into agriculture is at present creating a considerable amount of interest, a short sketch of the circumstances which led up to its manufacture, and which constitute its claim to the consideration of agriculturists, may be interesting to many readers of the 'Transactions.'

The Nodules on the Roots of Leguminous Plants.

These nodules were observed by the famous anatomist Malpighi about the year 1660. He thought they were of the nature of galls, but was surprised to find that they never had any eggs in them. Strange to say, no further notice seems to have been taken of them for a couple of centuries, and the first to make a careful microscopic study of them was the eminent Russian botanist Woronin, to whom we are indebted for the discovery of the fungus that causes the disease in turnip which we in this country call *finger-and-toe.* He described the anatomy of the nodules on the roots of the lupin in 1866, and noticed that at a certain stage of their development they were filled with a slimy matter containing myriads of tiny little bright corpuscles capable of motion, and resembling in structure and behaviour the minute organisms known as bacteria. He also suggested that they might probably be the cause of the nodules, and that they were probably similar in their nature to the *Plasmodiophora,* or finger-and-toe fungus.

In 1874 the Swedish botanist Eriksson published a paper giving a very thorough and minute description of the nodules occurring on the roots of the common bean, *Faba vulgaris,* in which he found also the presence of minute knotted threads, which appeared to be the hypha of a fungus. Professor Frank of Berlin studied these threads and formed the opinion that there was some connection between them and the bacteria-looking bodies, though he could not make out precisely what the connection was.

Prillieux, in France, from a study of the nodules, came to the conclusion that they were caused by a parasitic fungus like the *Plasmodiophora* of Woronin, that the bacteria-like bodies were derived from the fungus, but that they were not true bacteria.

Professor Marshall Ward in this country studied the nodules on the roots of the bean, *Faba vulgaris,* and arrived at a similar conclusion. He found that the fungus was so universally distributed in soils that the roots of leguminous plants could not escape it; but with very great precautions he managed to grow beans without nodules in carefully prepared solutions. As a botanist he regarded the fungus as belonging to the genus *Ustilago*—the organism which gives rise to smut in wheat—but that, unlike the smut plant, it did no injury to the plant, but was distinctly advantageous to it.

The Function of the Nodules.

De Fries (1877) regarded them as absorbers of nitrogen, for he found that they were full of albumen during the whole life of the plant until about the time of the ripening of the seed, in which is stored the albumen for the use of the future generation.

Schindler was the first to express the opinion that the nodules were growths which enabled leguminous plants to enter into symbiotic relationship with micro-organisms in the soil—that is to say, a relationship which tended to the advantage both of the plant and of the organisms invading it.

Bacteria and Bacteroids.

Brunchorst (1885) made a botanical study of the nodules, and found them to contain little cellular bodies something like bacteria, but not real bacteria, and he named them *bacteroids.* Other Continental botanists of eminence were making a careful study of the nodules, and expressing various opinions regarding the morphology and functions of the bacteroids, when Beyerinck of Delft found that both bacteria and bacteroids were present, and that the former gave rise to the latter.

Bacillus radicicola.

Beyerinck succeeded in growing the bacteria got from the nodules of a variety of leguminous plants by putting them into nutritive media of his own manufacture, and so for the first time causing them to grow altogether outside of the plant. He gave to the bacterium the name *Baccillus radicicola.* Moreover, he found that the bacilli derived from different species of leguminous plants, though they resembled each other in a general way, presented some distinguishing differences.

Enough has been said to show that thirty years ago these nodules had been carefully studied and described by Woronin, and that twenty years ago their mode of formation and their functions as regards the leguminous plants on whose roots they grow were being keenly discussed by many botanists all over Europe.

Hellriegel's Discovery.

While botanists were studying the anatomy and development of the nodules and speculating as to their functions, an extensive series of experiments was being made by two agricultural chemists — viz., Professor Hellriegel and Dr Wilfarth, who grew leguminous plants in pots under glass subject to careful analytical control, and paid special attention to the nodules and the conditions under which these appeared. Their research began in 1883, and after three years they were able to communicate a paper to the Association of German Naturalists, in which they enunciated the startling intelligence that the presence of nodules on the roots of leguminous plants was not only favourable to their growth and due to the invasion of the root by a micro-organism resident in the soil enabling them to become a store of nitrogenous matter for the use of the plant, but that in some mysterious way they enabled the leguminous plants to make use of the free nitrogen of the air—to assimilate it—that is to say, to convert it into living albuminoid matter in their bodies.

That was a very surprising announcement, because for fifty years previously it had been almost universally taught that plants had no such power. Experiments made by Boussingault in France, and repeated by Lawes and Gilbert in England, were held to have settled that point once for all.

Leguminosæ can assimilate free Nitrogen.

Any doubt which may have been entertained regarding the accuracy of Hellriegel's discovery was soon set at rest. His experiments were eagerly repeated at the various agricultural stations of Europe and elsewhere, and his results entirely confirmed, so that we are now in possession of a great mass of evidence to prove that leguminous plants are to a very remarkable extent possessed of the power of absorbing and assimilating the free nitrogen of the air, and that this power is associated in some way with the growth upon their roots of nodules caused by the invasion of the roots by micro-organisms which are almost universally distributed in the soil.

It would be out of place here to describe even shortly the experimental data on which Hellriegel founded his conclusions, but a few words may be said regarding the main fact.

How Hellriegel proved it.

If leguminous seeds are planted in a soil that has been previously sterilised—say, by means of heating to a temperature high enough to kill any living organism therein, whether animal or vegetable—it is found, if the soil is a fertile one, that the seeds will germinate and the plants will grow, but that there will be no nodules on their roots. If the sterilised soil contains all the elements of fertility except nitrogenous matter, the seeds will germinate but the plants will not grow. If, however, to such a soil there is added a mere sprinkling of a fertile soil that has not been sterilised, or a mere teaspoonful of a watery extract of an ordinary fertile soil, the leguminous seeds germinate, the roots of the plants acquire nodules, and they grow despite the want of nitrogenous matter in the soil so long as they are in contact with the free nitrogen of the air. The explanation is that the few particles of a fertile soil, or the few drops of watery extract therefrom, have conveyed to the non-nitrogenous soil the micro-organism which enters the roots of the plants and causes nodules to appear there, and in so doing endows the plants with the power to obtain their nitrogenous matter from the free nitrogen of the air in the absence of every other source of nitrogen, whether in the soil or in the atmosphere.

A clearing up of Mysteries.

This discovery is not only one of great scientific interest, but it is one which has a very practical bearing upon agriculture. It affords at least a partial explanation of some facts that have been long known to farmers. It explains why it is that it is possible to grow good crops of beans, vetches, clover, and other leguminous plants without the aid of nitrogenous manures, and why it is that many leguminous crops can grow well on land comparatively poor in nitrogenous matter.

It helps to explain what has been abundantly proved in recent years, that a soil on which leguminous crops have been frequently grown increases in fertility from the accumulation of nitrogenous organic matter.

The nodules are found on analysis to be very rich in nitrogen, and a study of their history shows that as they grow old they soften and disintegrate and give back some of their living nitrogenous constituents to the soil in the form of spores. Whether these spores in the soil continue to grow and absorb free nitrogen from the air of the soil is not known as yet; but, whether or not, there is an accumulation of nitrogenous organic matter in the soil due to the large residue of root material that is left there after the crop is removed; and as the nitrogenous part of this residue has been in large measure absorbed from the air, the soil thereby becomes richer in nitrogenous matter.

An explanation is thus afforded of the fact known for centuries, that after a good crop of clover there comes a good crop of wheat; for wheat, like other cereals, depends for its vigorous growth upon finding in the soil an immediate supply of very easily assimilable nitrogenous matter.

Schultz-Lupitz's great Practical Experiment.

A very striking proof of the practical value of growing leguminous crops as a means of increasing the fertility of poor light land was furnished by Schultz-Lupitz in Altmark, North Germany. About forty years ago he introduced a system of farming founded upon the theory that leguminous crops and cereals had two entirely different functions to perform in the economy of the farm. The former he regarded as *nitrogen collectors*, and the latter as *nitrogen consumers;* and he resolved to make the one supply the wants of the other. He applied to his poor sandy land mineral manures only—viz., phosphates, potash salts, and lime—and he found that leguminous crops grew very well under such treatment, but especially lupines, which in that district produced very bulky crops. These he sometimes ploughed in as green manures, and he sometimes reaped them. He alternated his leguminous crops with rye at first, but afterwards, as his soil became richer, he grew oats and other cereals. The result was that after a number of years he converted a poor barren soil into a rich one, capable of growing abundantly a great variety of crops; and this he succeeded in accomplishing without the application of any bought-in nitrogenous manures whatsoever. His soil became gradually richer in nitrogen, and when asked where this store of nitrogen came from, he answered that it was brought into the land by his leguminous crops, and he presumed that these must have got it from the air. He, as a practical agriculturist, had proved the fact, and he left it to scientists to discover the reason; and there can be no doubt that his experiments provided a powerful stimulus to the investigation of the sources whence leguminous plants obtained their supply of nitrogen.

How Inoculation began.

As soon as it became known that leguminous crops owed their vigour to the co-operation of minute organisms contained in the soil, the very natural inference was drawn that the refusal of some soils to grow clover or other leguminous crops well might be due to the scarcity or even to the entire absence in the soil of these organisms. Experiments were immediately made to prove this, by taking some of the soil from a field where leguminous crops grew well and incorporating it with the soil of a field where they grew badly. Some of these experiments were reported to have succeeded, but the process of carting soil from one field and putting it on another had its disadvantages. It was a laborious process, even when the fields were near each other, and expensive to boot if they were at a great distance. There was the further disadvantage that along with the desirable organisms there might be others imported, in the form of weed-seeds, or of diseases that were highly undesirable.

Pure Cultures.

These considerations suggested to Professor Nobbe of Tharand the expediency of growing the organism in artificial media as Beyerinck had done, and of inoculating the soil with perfectly pure cultures, so that if the inoculation did no good it at least could do no harm.

The method of making a pure culture, while it is somewhat laborious, is by no means difficult so soon as a suitable medium has been discovered. The usual basis of such media is gelatine, to which is added while liquefied a supply of the mineral matters required by plants, and perhaps a decoction of the plant itself on which the micro-organism under investigation is accustomed to feed. The jelly sets upon cooling, and in order to grow an organism upon it, all that is necessary is to touch the substance under investigation with a platinum wire which has been previously sterilised by passing it through a flame, and to transfer it to the jelly by drawing the wire across its surface. The jelly is now covered up and kept at a suitable temperature until little growths, or colonies as they are called, are seen along the scratch made by the wire, and if these are all of the same kind the culture is a pure one. If they are of different kinds, a second culture must be made from the particular colony that is desired. The method requires the adoption of many precautions, and attention to many details, which need not be referred to here.

Nobbe's Pure Culture Experiments.

Professor Nobbe, assisted by Dr Hiltner and Dr Schmid, made a long investigation by means of such pure cultures, and found that what had been observed by Beyerinck was true—viz., that there were differences in the character of the bacteria, according to the kind of plant whose nodules they had been cultivated from. It had been previously noticed by Hellriegel that soil that had grown peas for instance, but never lupines, was very good for inoculating a soil where peas were planted, causing the plants to grow more vigorously, but it had no effect whatever on the growth of lupines. Nobbe found that the best results in the way of inoculation were attained when the micro-organisms were got from a soil growing plants of the same kind as those he was experimenting with; so that in order to give vigour to a clover crop, the soil should be inoculated with micro-organisms obtained by cultivation from the nodules of the clover-plant, and so on.

Nobbe is of opinion that the *Bacillus radicicola* of Beyerinck is the one original organism present in all soils, but that it is powerfully affected in its nature by the nature of the leguminous plant it grows in. It acquires an impress from the plant that makes it more suitable for growing in the roots of that plant than in those of any other. Accordingly, in preparing material for inoculation, cultures made from the nodules of the various species of leguminous plants are kept distinct, so that they may be used for application to crops of that species only.

The Inception of Nitragin.

Nobbe and Hiltner advanced so far in their experiments as to be convinced that the pure cultures they made were capable of yielding satisfactory results when applied on the large scale in agricultural practice. Whether or not this conviction is well founded remains to be seen; but one cannot but admire the despatch with which the substance has been named, protected, and consigned to a large chemical firm for manufacture, who supply it in a neat, handy form, at a comparatively small though doubtless very remunerative price, accompanied with minute instructions printed in various languages, and transmitted to purchasers in a faultless manner,—all of which is creditable to German commercial enterprise.

It would certainly have been more satisfactory if a sufficiently large number of field experiments had been made to ascertain the agricultural value of nitragin before booming it in all the markets of Europe; but those who are in possession of the patent know their own business best, and we can only hope in the interests of agriculture that the virtues they ascribe to nitragin may be in some measure realised.

Is it likely to succeed?

If it be the case that the *Bacillus radicicola* of Beyerinck is the one original organism to which the growth of the nodules is due, and if it be true that it is universally distributed in fertile soils, it seems strange that it should require to be imported. It may be that, owing to unfavourable conditions, some soils may contain very little of the organism. In such cases the importation of fresh organisms by means of nitragin inoculation may have a transiently good effect, but it is evident that for any permanent benefit, the unfavourable conditions of the soil must be discovered and removed. If there are soils so circumstanced that the organism will not grow in them at all, the importation of organisms is as useless as it is in the case of fertile soils where they are already present in abundance. What the conditions are which are favourable to the growth of the *Bacillus radicicola* have yet to be studied, but it is reasonable to expect that they will be found to be just those which experience has shown to be favourable to the growth of leguminous crops generally—viz., in the first place, basic and even alkaline as opposed to an acid condition of soil. But it is premature to speculate regarding the practice of inoculation with nitragin, and we had better wait a few months until we learn the results of the numerous field experiments with it which are now in progress in this country and elsewhere.

BRITISH BREEDS OF PONIES.

By William Scarth Dixon, York.

Introduction.

Of all our domestic animals none have perhaps been so much neglected as the pony, and of none is so little of the history known. In whatever part of the country one may travel in the search for information the same tale is heard—viz., that ponies have lived on the hills from time immemorial; that they are not so good or so numerous as they once were; and that any attempt at crossing has proved a failure.

These are the opinions which one might almost expect to hear from the "oldest inhabitant," the man to whom one naturally resorts for information which is more or less based on tradition. But it is, after all, information which is to be taken with a little grain of salt, though there is a strong substratum of truth in every count in the indictment against the modern successor of an ancient line. Everywhere during my travels—whether on the fells of Cumberland and Westmoreland, amidst the Tors and granite rocks of Dartmoor or the sweeping coombes of Exmoor, whether amongst the rough and wild scenery of the New Forest or the hills over which Caradoc towers majestically, the tale has been the same: "We have had these ponies for hundreds of years." And in all these places that is practically all the information obtainable about the history of ponies prior to the middle or latter end of the eighteenth century, whilst since that time the history is of a very fragmentary character indeed.

It would be impossible to travel amongst the hills and moors as I have done without forming some theory about the ponies and their early history, and I think no one who has visited our British breeds of ponies in their native haunts can fail to come to the conclusion that, at any rate so far as the southern division of the island is concerned, they are of common origin, and that the points in which they differ, though many, are the result of special surroundings. That they had a considerable infusion of Eastern blood, or something approaching it, in the distant ages, is far from being improbable, the density of their bone, the clear definition of their sinews, and their "blood-like" action, all pointing in this direction.

Of course this is mere surmise, and what is more to the point is that we have in the country a breed of ponies which is probably indigenous to it—a breed distinguished by hardihood and endurance, which is capable of taking long journeys in a short time, and whose strength is out of all proportion to its size. In these particulars all the pony breeds of which I am about to treat are alike.

It is therefore the more curious that such a valuable class of stock should have been so long neglected and bred in haphazard fashion, for that ponies have been neglected till the present century is certain; and in some places, as I shall have to relate elsewhere, the mountain sheep has been the greatest enemy of the equally hardy and equally useful mountain pony.

Another fact which is worthy of record in relation to pony-breeding is that ponies have not been bred wild for many years—for aught I know to the contrary, for many centuries—in what are known as the horse-breeding counties—*i.e.*, in Yorkshire, Lincolnshire, and Norfolk. In the fells of Cumberland they are still bred, but even there they are bred in different fashion to that which obtains on the moors of Devonshire and Somersetshire, in the New Forest, or on the Long Mynd Hills.

Of late years the value of the pony stock of the country has been more and more fully recognised, and many have been the attempts to improve it. But it is naturally a difficult task; for with improvement, or perhaps what some would dub "so-called" improvement, there is apt to come increase of size and loss of the leading characteristics of the pony. Some of the weak places in the pony it may be impossible to remedy, but it must always be borne in mind by pony breeders that diminutive size is an important factor in the value of a pony.

That the ponies are not so numerous in *some* quarters as they once were is probably true enough, and may to some extent be accounted for by the fact that many ponies have been crossed with bigger horses, with the natural consequence that the produce has lost much of the pony character. The statement also that no cross proves successful, which, as I have said before, wants taking *cum grano salis*, is true enough from the standpoint of the pony breeder, and especially so from the standpoint of the breeder who practically lets his ponies run wild. But there are many excellent animals bred from a cross between ponies and Arabs or barbs, or even hackneys, though it must be admitted that it would be a misnomer to call them ponies.

The deterioration in the type of the modern pony which the oldest inhabitant talks of so freely I am inclined to treat as a myth; and in discussing the matter of ponies the other day with a gentleman who has judged at the Royal Show on both the occasions on which it was held at Plymouth, he unhesitatingly affirmed that what struck him most forcibly at the show in 1890 was the great improvement to be noticed in the Exmoor ponies during the twenty-five years which had elapsed since he had last seen them in the West.

EXMOOR PONIES.

Perhaps the pride of place may be given to the Exmoor pony, partly because, next to the Shetland pony, he is the best known to the general public. Indeed with some people what is not a Shetland pony is an Exmoor, and *vice versa.*

Many years ago I remember mortal offence being given to a very good sportsman, and very innocently. Hounds had had a good run, and he had been well carried, and a friend said to him, as they were returning home, "Your pony carried you well, sir." "Pony!" shouted he, in great dudgeon; "I am not riding a pony, sir, I am riding a *little horse.*" And if I were to be asked to describe the Exmoor pony in the fewest possible words, I do not know that I could find a better description than that of a "little horse."

The Exmoor pony is in height from 11 hands 2 inches to 13 hands, but perhaps the average height may safely be given at 12 hands, or 12 hands 1 inch. In colour they are principally brown, with a mealy muzzle, the mealy muzzle extending a long way up the face. The head is a small one—indeed it may almost be said to be too small—the forehead is broad, and the ears are short, and pricked forward. Long underneath and short on the top well describes the conformation of the Exmoor pony. His shoulders are deep and well laid, his back is short and strong, and in front he is elegance itself. But every Exmoor pony is decidedly "goose-rumped," and falls away a little on the quarters, a circumstance which certainly does not tend to improve his general appearance. This, however, is a characteristic of nearly every breed of ponies, and taking them on the whole, Exmoors have their hocks better set on than have most breeds. The bone is flat and clean, and the sinew full and well defined; indeed the legs may fairly be classed as thoroughbred in character, and this lends an air of probability to the somewhat mythical story of a Spanish or Arab stallion named Katerfelto, which furnished Major Whyte Melville with materials for a charming Somersetshire novel. Some have described the Exmoor pony as a miniature cart-horse with action; but wide and powerful as he is, I think he scarcely answers this description so well as do some other breeds of ponies. While the Exmoor is generally brown, with a mealy nose, blacks and greys are occasionally seen. A roan or a chestnut is, however, looked upon as a sure sign of alien blood. It seems almost unnecessary to add to the description that the coat is long and shaggy, the mane and tail long, and the eye especially bright and "knowing."

Sir Thomas Dyke-Acland is the only man who now owns a herd of pure Exmoor ponies, for he and his father always strenuously opposed resorting to any out-cross.

The history of the Exmoor pony during the present century at any rate is easily followed. Previous to 1815 Sir Thomas Dyke-Acland, the father of the present owner of Holnicote, leased the whole of Exmoor from the Crown and had a large herd of ponies on the moor, the numbers of which have been variously stated at from 500 to 900.[1] But in 1815 Mr Knight purchased the moor, and a sale was necessitated. Four stallions and some mares were kept, and of course these would be of the best. They were sent to a farm on Winisford Hill named Ashway; and it is here that the pure Exmoors are still to be found, and here alone. It is related that when the Ashway stud was first formed, a stallion which was taken from the forest to Ashway, not liking his new quarters, took a bee-line back again over the country, a distance of about thirty miles. Fences of different descriptions were successfully negotiated on the journey; and here I may say that I have been told that an Exmoor pony can jump any ordinary gate. There seems no reason to doubt this, and those who have seen Shetland ponies jump more than their own height can well understand how it would take a formidable obstacle to turn any wild pony when bent on getting to favourite quarters. The pony in question was of course recovered, and was named Katerfelto; and I am told that he did much good in the stud. From ninety to a hundred mares are now kept at Ashway, and from six to seven stallions.

Sir Thomas Dyke-Acland has tried one or two crosses, as have some of his neighbours; but he has given them up, and he many years ago came to the conclusion that crossing was a mistake, and that it tended to the deterioration of the breed. Indeed the result of crossing was a loss of type altogether, and especially is this the case if an increase in size has been obtained. The mealy nose disappears, they grow short in the neck, and the fine shoulder, which is one of the distinguishing features of the Exmoor, is lost and becomes more upright.

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[1] In the notes on Exmoor Ponies in the 'Live Stock Journal' for May 28, 1886, some of which were contributed by Sir T. Dyke-Acland, the number is given as 500, but in the next column another correspondent gives the numbers as 900. In all probability the smaller number would be correct, but it is a matter of little importance. In all the main features the two histories of the breed agree. Mr Birmingham, Sir T. Dyke-Acland's agent, did not give me any particulars of the number of ponies on the moor at the time of the sale to Mr Knight, but merely said that all the ponies belonged to Sir Thomas Dyke-Acland, and that there was a great sale in 1815 or 1816.

Indeed the riding character seems to disappear altogether in the second and third generations.

So the pure breed has been strictly adhered to, with the result that the Ashway or Holnicote stud have a world-wide reputation. But considerable care is taken with the selection of stallions, and there is nothing of the haphazard system of breeding which is adopted in some districts. The mares, too, are carefully sorted, and the best, as a matter of course, are retained for breeding purposes.

The ponies are practically run out all the year round, but Sir Thomas Dyke-Acland has of late years brought the younger ponies "inland." Some score of suckers with their dams are brought down to Killerton Park, near Exeter—where, by the way, the grass is of excellent quality—in October or November. The dams are soon sent back, but the youngsters are kept till they are rising two years old. This, of course, means being wintered twice and summered once on the richer pastures of the lowlands. They then go back to the moor farm and take their chance with the rest till they are wanted either for work or for sale. In September of the year that they are two years old all that are not required for stallions are castrated.

This wintering of the young ponies in the low country is attended by beneficial results: they widen and thicken with the better feed, and their hocks are also much straighter and better set on, for they have not to crouch in an unnatural position to avoid as much as possible of the wind which sweeps across the bleak moors—and there is no doubt the crooked hind-legs of hill ponies is largely due to this habit of crouching.

On the hill farm, too, hay is given in the winter. The best market, indeed it may be said almost the only market, is Bampton Fair, which is held in the last Thursday in October. Here most of Sir Thomas Dyke-Acland's ponies are sold, and hundreds of Exmoor ponies of more or less purity find a home. Auctioneers drive a busy trade here, and a considerable proportion of the ponies are sold by auction.

The uses of the Exmoor are many. He is a capital harness pony, and can go at a fair pace all day long. As a pony for the use of children he cannot be beaten; and he makes a famous boy's hunter. Sir Thomas Dyke-Acland also uses them to carry the shooting-party up to the moors, and it is wonderful to see what weights they can carry. As for price, they vary from £3 to £12 per head; but the latter is a price which is only occasionally realised, and perhaps about £6 is the average price for useful three-year-old ponies.

Perhaps a few words should be said about Mr Knight's ponies. He tried a cross with an Arab, but it did not succeed, the produce gaining size but losing type. Neither did the cross with a cob succeed any better. Indeed experience would seem to show that any cross on the Exmoor mare is more or less of a failure, whilst so impressive is the Exmoor stallion, that when properly mated an excellent half-bred animal is the result.

Of horses bred in this way I saw two or three specimens during my visits to Exmoor. One, by an Exmoor stallion from a light cart mare, was an excellent weight-carrying cob, one of the hardest and best of harness-horses, that could go all day with a heavy load behind it and never tire. Another from a thoroughbred mare was even more taking in appearance, for it was more of the saddle type, lengthy, with a good neck, back, and loins, and nice action. I was not surprised to hear that it could go all day, and it was certainly a most desirable animal for a man to have in his stable.

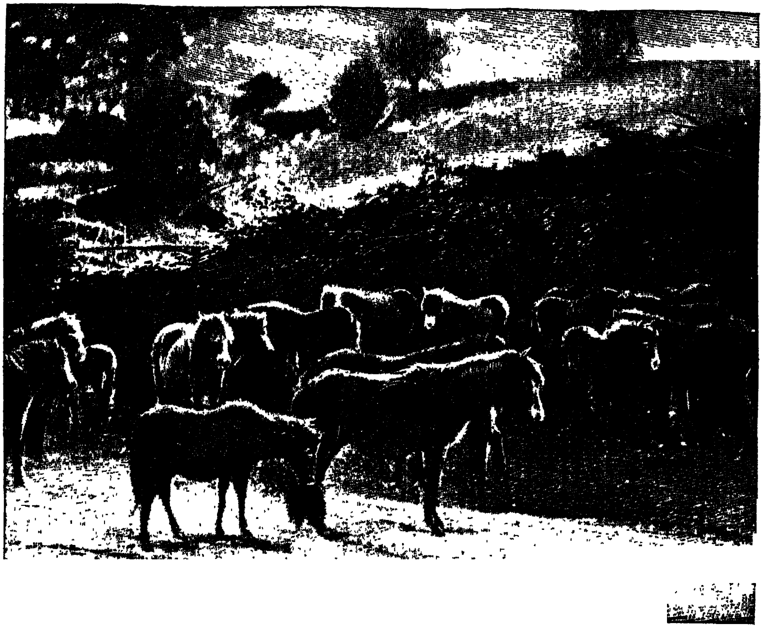

Fig. 50.—Exmoor Ponies.

Fig. 50, giving a group of Exmoor ponies, is reproduced from the 'Pall Mall Magazine.'

Dartmoor Ponies.

The Dartmoor pony can scarcely claim such purity of blood as his Exmoor neighbour, whom he much resembles in many particulars. Indeed so small is the strip of enclosed country between South Molton and Okehampton which separates the two moors, that it is almost certain that in that particular neighbourhood at any rate the two breeds will have been to a certain extent mixed.

Be this as it may, it is quite certain that the ponies on the north side of Dartmoor and the south side of Exmoor approach each other so closely in character that good judges have been occasionally deceived as to their identity. Then a pony which did much good in both districts, Lord Arthur Cecil's Chieftain, who hailed from the Isle of Rum, was used by Sir F. Knight at Simonsbath, which is on Exmoor, and he was also used freely at Okehampton. This will doubtless have something to do with confusing the types, but the Exmoor has a smaller and broader head, with ears more pricked than the Dartmoor.

But in the more southerly portion of Dartmoor the type of pony certainly differs materially from the Exmoor. He is on rather a bigger scale to begin with, and he has scarcely so much of that undefinable property known as quality. He is also taller, few being found under 12 hands, whilst the height increases up to 13 hands 2 inches, and in some cases even up to 14 hands; for of late breeders have made an attempt to increase the size of the ponies, and in this they have been so far successful, that with increased height they do not appear to have lost hardihood of character. But whether they have lost somewhat of the original type of the Dartmoor pony is more open to question.

In what I saw of the ponies on the moor they seemed to be uneven in size and character, and by no means to possess that uniform appearance which is such a feature in the Exmoor. In the first place, they are of all colours; and as it is said a good horse can never be a bad colour, so on Dartmoor colour does not seem to be made much of an objection provided other things be satisfactory. I saw all colours during my drive from Tavistock to Prince Town *viâ* Whitchurch, but the prevailing colours seemed bay, brown, and black. I saw a few chestnut ponies, but only a few; and the grey ones—that is, the light grey ones—were also few in number. They were, however, there in sufficient number to show that they are not infrequently bred.

The best type of Dartmoor pony I saw would stand about 13 hands high, or perhaps a little over; he had powerful loins, and a good muscular back; his shoulders were fairly placed, though they scarcely possess the elegance of the Exmoor in this particular; his thighs were muscular, his arms well developed, and his knees and hocks showed great power for one of his size. He was, however, crooked in his hind-legs and goose-rumped; indeed his hind-legs were more crooked than is generally found in the Exmoor, and I found this to be the case with most of the ponies I saw. They are very active little fellows, however, as well as powerful. Perhaps a definition which would fit them as well as any is a somewhat coarse Exmoor, a size or a size and a half larger in scale, though of course such would not be an accurate description.

The history of the Dartmoor is even worse to get at than that of the Exmoor. Whomsoever I asked about the early history of the breed and the traditions relating to it gave me pretty nearly the same answer: "The ponies had been on Dartmoor for hundreds of years." And this reply was occasionally supplemented by the information that "few of the original ponies are now to be found." From what I saw I should be inclined to think that crossing has been very extensively adopted on Dartmoor, and not with altogether good results. The Hackney cross has been tried, but, as is the case with pretty nearly all the hill breeds, the result was anything but satisfactory, especially in succeeding generations, and there was a loss of constitution. Arabs have been tried, Mr Bolt having introduced some, whilst Mr Lang brought a Welsh pony on to the moor. But neither of these crosses were successful, and the produce of them were unable to stand the bleak climate of Dartmoor in the winter. For Dartmoor is a bleak place indeed: the average height of the moor is 1200 feet above sea-level, it is 130,000 acres in extent, and in winter, when the wind sweeps across it, it is bitterly cold. Then the grass does not seem to be of the quality that it is at Exmoor; and there was very scanty pasturage for the ponies, cattle, and sheep when I paid my visit.

From what I heard, the cross which has answered the best is the Exmoor, and some admirable ponies have been bred by Exmoor sires. Some breeders look upon the result of this cross as improved Dartmoors; and they certainly are handsome little fellows, and hardy withal. Breeding is carried on in a more or less haphazard fashion—*i.e.*, there are many stallions running wild on the moor, but no entire colt is allowed on the moor after he is three years old, which is probably a survival of the old laws of Henry VIII. with respect to stallions owned by commoners.

Practically the ponies run out all the year, though some breeders take theirs into yards. At the prison this is done with many of the ponies, and I was told that the prison ponies are a little larger in size than the general run. Whether this is the result of better keep, or whether it comes from a larger class of sire being used, I cannot say, as I unfortunately had no opportunity of seeing the prison sires, or talking over the question with the prison manager.

Some of the ponies are possessed of wonderful instinct. I was told of one old mare which used regularly to come home from the moor immediately before the first snowstorm, always bringing with her her two-year-old, yearling, and sucking foal. She stayed at home during the winter months, but as soon as spring arrived and the young grass began to be in evidence she went on to the moor again. Her two-year-old, now a three-year-old, was either sold or went off on his own way; but the yearling and foal, now two-year-old and yearling, herded with the mare up to and after the time of her foaling, and as regularly as she went away with two of her progeny at her heels, so regularly did she come back, when the storms were about to begin, with three. The mares have their first foals at three years old.

It is of course necessary that the ponies should be hardy enough to stand the winter, and in a severe winter many die, literally of starvation; but it is astonishing what recuperative power the right bred ones possess; and they will be sleek and glossy in their coats and full of condition in a very few weeks after they have presented the appearance of the proverbial bag of bones. Under ordinary circumstances they are very long-lived, the mare above mentioned being sixteen years old when she died.

They are driven up once in a year, but there seems to be considerable difficulty in getting to know when the "drift" will take place, as for some unknown reason it is made a secret. At this drift the ponies are branded, and if any pony should not be claimed he is sold by the Duchy Court. It is needless to say that this is of very rare occurrence. A small fee is charged for the branding.

It only remains for me to speak of the market. There does not appear to be any special fair devoted to them as is the case with Exmoors, but there is an excellent demand for them. Those that are small enough go to the mines; the others are used for harness and general purposes. They are generally sold at from three to six years old, but lately even two-year-olds have found a market. The Bristol dealers are good customers; and I heard of one man, who hails from Essex, having bought between two and three hundred, and another dealer had picked up a nice little lot of two hundred. Prices have had an upward tendency of late, and as what is got for the ponies is practically all profit, breeding on Dartmoor must be regarded as a remunerative industry.

NEW FOREST PONIES.

The New Forest has a charm peculiarly its own. The scenery is the most picturesque to be found in the length and breadth of the land; the historical associations are of exceptional interest. But it is not alone because events of national importance, affecting the destiny of a great people, have taken place within the precincts of the Forest that it possesses such an interest. Many districts are quite as full of stirring incident in the history of our nation. It is rather because that in the New Forest one can catch, as it were, glimpses of the old life which our ancestors lived centuries ago. For the common rights of the Foresters date back to Earl Godwin, and even earlier, and one of the kings to grant them charters was said to have been that wise statesman, Knut; and it is in the New Forest, and the New Forest alone, that there is still to be found, in the words of Mr Moens, "the last piece of the Forest primeval in England —the very last bit of older England—the England of the outlaw, of the singer of ballads, of the lover of life in the greenwood."

But interesting as is the subject of the New Forest and its customs, and great as is the temptation to linger over the survival of customs which have lasted for centuries, it is the ponies of the present day of which I have to write, and I must leave the customs of the Forest to others more able than I am to deal with them. The fact of the Forest still remaining in the hands of the Crown, together with the interest which has been taken in horse-breeding within its precincts by royalty, make the history of the Forest ponies more trustworthy than that of many of our native breeds. We know that early in Plantagenet times there was a royal stud in Wiltshire, for King Henry III. directed that the profits of the stud should be given to the monks of Beaulieu for the benefit of his father's soul, and to assist them in building their abbey. And the connection between the royal stud at Clarendon and the New Forest was a close one, as payment for a lot of stallions for the former establishment was made through the Warden of the New Forest.

But notwithstanding that so much is known of the ponies and their history, their origin is the same as that of the other breeds of which I have treated. They have been there "always." What is really known about them, though it is of greater antiquity than what is known of the Exmoor and Dartmoor, practically amounts to the same thing—*i.e.*, the known history relates entirely to the preservation and improvement of the breed. Ponies there have been in the New Forest, or, to use the older name, Ytene, before the white horses of Saxon invaders reached the shores of Kent, and before the eagles of Cæsar crossed the Channel.

The legislation of Henry VIII. on horse-breeding has so often been quoted of late that it is familiar to every one who takes an interest in the subject. In 1543 no commoner was allowed to run a stallion over two years old less than 15 hands high. Then there was a statute to the effect that all stallions under 14 hands high, and all mares not capable of breeding and rearing a healthy foal, should be killed at the annual drift at Michaelmas, and, according to Gilpin ('Forest Scenery'), the height was afterwards limited to 13 hands for stallions and 12 hands for mares.

There is in the Forest a tradition to the effect that some horses escaped from the Armada and were of great benefit to the native breed; and in this connection it is curious to note that a similar tradition exists in the north, whilst the more or less mythical Katerfelto, whose name is so frequent in Exmoor, is said to have been of Spanish extraction. In the first half of the sixteenth century, when a considerable importation of new blood took place from Turkey, Spain, Naples, and Flanders, it is pretty certain that the New Forest would not be forgotten, for, as has already been pointed out, a royal stud was already in the neighbourhood, Clarendon being within a very few miles of the Forest.

A more important infusion of blood was obtained later on. William Augustus, Duke of Cumberland, was the Warden of the Forest, and, as is well known, he was devoted to agriculture and sport, especially in the concluding years of his life. In 1750—nearly a hundred and fifty years ago—he became the owner of the famous racehorse Marske by Squirrel, the dam by Blacklegs, granddam by Bay Bolton—Fox Cub—Coneyskins—Hutton's Grey Barb—Hutton's Royal Colt—Byerly Turk—Bustler. Marske proved a disappointment when put into training, and, after losing his second match with Lord Sandwich's Snap, he was sent to the stud. Like the Godolphin Arabian, Traveller, and other good horses, he was little thought of at first, and was purchased, when the Duke's stud was broken up, by a Forest farmer; and until Eclipse electrified the racing-world by his magnificent performances, he served mares in the New Forest district at a nominal fee. So that in all probability many of the mares now in the Forest have the blood of the sire of Eclipse in their veins, a fact which is sufficient of itself to account for their courage and staying power.

Later on the Prince Consort sent a grey Arab to the Forest that did much good; and her Majesty a few years ago lent a couple of Arab stallions—Abeyan, which was the gift of the Imaum of Muscat, and Yirassan—both of which did good service, and were the sires of some promising colts which were destined for use in the Forest as stallions.

There are something like 3000 ponies in the Forest for which marking fees have been paid, and of these the majority are brood mares.[1] For these brood mares at least a hundred stallions are required, and as the stallions run wild with the mares, it is obvious that there is not any encouragement in the way of service fees to induce a private owner to introduce a better class of stallion. So over the greater part of the Forest "happy-go-lucky" was the order of the day, with the usual result that the breed began to deteriorate, losing size, and above all constitution, by a continuous course of inbreeding.

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[1] It is estimated that there are at least 1800 brood mares.

When this was recognised, resort was had to various crosses, and Norwegian, Welsh, and Exmoor ponies were tried, but none of them met with marked success. Indeed the Norwegian cross was a failure, as it also proved in the Long Mynd Hills. Barbs, Arabs, and English thoroughbreds were also tried, and Arabs and thoroughbreds were very successful.

But it was soon found that private enterprise could not do sufficient to meet the requirements of the case, and the Forest Pony Association was formed. Under the auspices of this Association prizes were given to ponies to be turned out on the Forest, and the others were kept in hand, serving the mares of members free. Since these means were adopted there has been a marked improvement in the New Forest ponies, and from what I saw of the young brood mares the improvement is likely to continue.

So far as regards the management, most of the ponies are wintered in the Forest since the old laws about winter heyning were abrogated, though some few are brought into the enclosed country and given a little hay. Of course the ponies wintered in the Forest get thin, but they freshen rapidly when the new feed puts in an appearance. Perhaps April is the most trying month for them. As it is manifest that a pony which lives absolutely all its life in the Forest costs nothing, it is not to be wondered at that hardihood is the chief recommendation in the eyes of the poorer Foresters. But it should be added that the New Forest is admirably adapted for a breeding-ground; and as Mr Gerald Lascelles has aptly said, "Ponies running wild elsewhere would laugh at the hardships of the New Forest." It has been stated that in the severe frost which visited the country a few years ago, when the Zuyder Zee in Holland was passable on foot, the ponies running in the New Forest did as well as those which were brought into parks and other enclosures and fed on hay.

Perhaps it should be added that at one time the fence months and winter heyning were something of a hardship on the commoners. During the fence month, which was from fifteen days before to fifteen days after Midsummer Day, all swine and sheep found in the Forest were forfeit to the Crown; whilst no one was allowed to pass to and from the Forest, or to fetch or drive cattle or ponies, for fear of disturbing the deer at fawningtime. This of course ceased when the deer were done away with by the Act of 1851. The winter heyning, which was from November to April, was also practically discontinued by the Act of 1877, which provides that, on the payment of twenty shillings yearly to the Crown, pasturage rights shall continue the whole year without let or hindrance.

It is scarcely necessary for me to add that the Forest is governed by the Court of Verderers, who are elected by those who have a parliamentary vote. Under this court are four Agisters or Marksmen as they are sometimes called. Each of these Agisters has a district allotted to him, and each one has his own "tail-mark" by which the ponies which pasture in his district can readily be recognised at a distance. Thus the north side mark is the right side of the tail squared; the south mark the near side squared; the east one ring round the tail; and the west two rings round the tail. These Agisters are famous Foresters, and can almost tell at a moment's notice where every pony is to be found. They are adepts at colt-hunting, a most exciting pursuit, which is sometimes rendered necessary by a shy pony that persists in straying from his or her proper pasture. They are paid wages by the Verderers, and the fees for tail-marking, &c., go to the court. The tailing fee is the moderate sum of eighteenpence. As in other places where they run semi-wild, the ponies haunt certain districts, and know their haunts well, returning to them from considerable distances.

The New Forest pony stands from 11 hands 2 inches to 13 hands 2 inches. In colour they are generally bay or brown with a tan muzzle, and a little white under the eyes. There is no restriction as to colour, and there are ponies of all colours to be found; and there are some excellent greys, descended from the Arab stallion sent into the Forest by the late Prince Consort. But brown with a tan muzzle is preferred, though I did not hear that any special importance is attached to the tan muzzle, or that there is any particular theory concerning it. They have a good lean head, well placed and deep shoulders, and good muscular backs. The bone is clean and flat, and there is plenty of it; and though rather short on their quarters, they are not so cow-hocked as some of the hill breeds, and there is more length and scope about them. They stand well on their legs, and show all the characteristics of a good riding pony. Their capacity for carrying weight is remarkable. They also make famous single-harness ponies, and are equal to ten or eleven miles an hour in a light two-wheeled conveyance.

There are fairs at Lyndhurst, Eling, Romsey, Ringwood, Martins Town, Britford, and other places where the young ponies find a ready market. Prices for foals range from £4 to £7 each, and for yearlings up to £12; and when they are taken

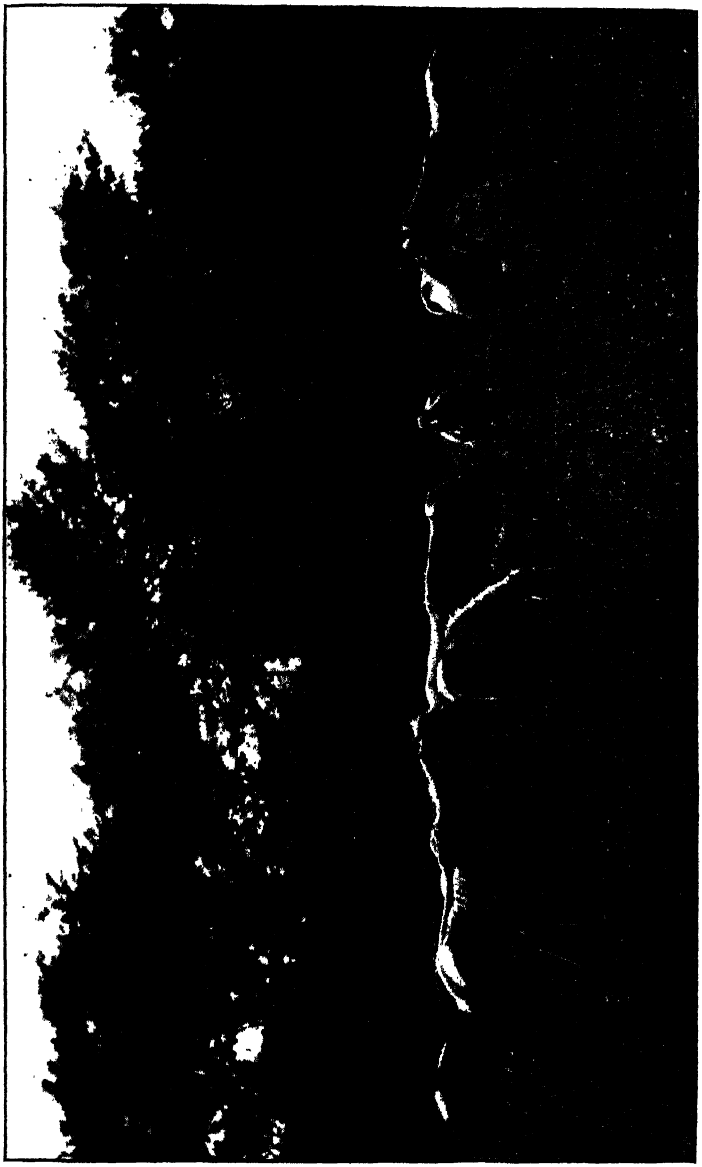

Fig. 51.—New Forest Ponies.

away at that age and put on to good pasturage they will frequently grow 2 or 3 inches higher than would have been the case had they been kept in their native Forest. One thing the would-be purchaser must bear in mind, and that is that the Forester never sells a mare unless he is very short of cash, or unless the mare has some fault; and when a mare is offered it is pretty sure that she is what is known amongst dealers as a "wrong un."

A brief description of one or two ponies I saw may be of interest. One of these was a five-year-old brown with white face and two white hind-legs, owned by Mr W. J. C. Moens. He is from a Welsh mare and by one of her Majesty's Arabs. He shows a lot of Arab character, is nicely turned, and has quality, substance, and action. Another five-year-old is a black by a grandson of Mr Christopher Wilson's Sir George from a pure Forest mare. He is a lengthy pony and has capital shoulders and good legs, but he droops a little on his quarters. Another pony I saw was from a Forest pony by an Isle of Rum pony, and the cross seems to suit, for the quarters were better than those generally seen on the pure-bred ponies.

Lord Arthur Cecil also showed me some handsome ponies at his Forest farm at Brockenhurst. Some of these were Welsh ponies, and one from the Isle of Rum, elegant, full of quality and fire, seemed like making a good cross with some of the mares I saw. A mare I saw at Brockenhurst struck me as being an excellent specimen of the breed. She was standing on the common, sheltering herself as best she might from the storm of wind and rain, but bad as the weather was she did not look wretched. She was, I am told, a well-bred one, and she united quality and substance in a remarkable manner, and I was told that she had probably sucked her dam till she was two years old.

Fig. 51, representing a group of New Forest ponies, is from a photograph taken in the New Forest by Mr C. Reid, Wishaw.

THE LONG MYND PONIES.

The Long Mynd Hills, which lie to the west of Church Stretton, are the home of a very useful but at one time a much neglected breed of ponies. It is a breed, too, so similar in character to that which is to be found on the Welsh hills, that what is said about the one may be applied to the other safely. To use the words of an experienced breeder, "The ponies on the Shropshire and the Welsh hills are practically identical in breed. They have been on the hills from time immemorial, and have been bred indiscriminately."

So far, therefore, the Long Mynd ponies are like the other breeds of which I have written. But in one respect they have been by no means so fortunate as their relatives on the Devonshire and Somersetshire hills or in the New Forest, for not only have they been left to look out for themselves, but actually driven off any hill land which was considered good enough to carry sheep,—dogs being kept on purpose to carry out this near-sighted policy. What the value of the ponies were when a mountain sheep was preferred may be easily imagined; nor is it difficult to see how, in such circumstances, the ponies would deteriorate rapidly as well as grow wilder with the treatment they received. Traces of this extraordinary wildness and shyness still remain, and I certainly think the ponies I saw on the Long Mynd Hills were the wildest I saw on my travels.

To a certain extent, then, the district, together with the treatment they received, may be said to have made the breed. They ran wild on the hills, where there was the poorest pasture, neglected, and breeding promiscuously like the wild horses of the American prairies, and, as is the case with them, the stallions herded the mares, and they continue to do so to the present day. The stallions are turned on to the hills like tups, and some of them are not much bigger than a Lincoln ram, and they stick to their own quarter as a rule. It is quite impossible to change a stallion's run, as he is sure to return straight to his old quarters the moment he has a chance. Another peculiarity of the breed is that the mares will not breed in captivity, of which I saw a remarkable instance when I visited Shropshire.

But after a while those who owned the ponies began to find that they had a value, and they awoke to the fact that the indiscriminate breeding which had prevailed for so many generations was a mistake. In this they were right enough, but knowing little of what a pony should be, they went in for size, and used the Welsh cob. This was a very unsatisfactory cross; and the Norwegian, Barb, Dartmoor, and New Forest ponies have also been tried, but the result has not in any case been up to expectations. The New Forest ponies undoubtedly sired some useful ponies, but they were comparatively delicate and could not stand the high winds of the hills. Arabs do well, and so do thoroughbreds, but of course the offspring is too delicate to stand the hills in winter, and they require to be brought inland and hand-fed a little. One Arab cross and then a thoroughbred on the produce did good for a time, and the result is often a good polo-pony. Sir Douglas, from Mr Christopher Wilson's Rigmaden stud, was also tried, and he did good in the district. Indeed some of the best polo-ponies bred there were by him, dam by an Arab, granddam a pure Long Mynd pony. But the produce again was scarcely hardy enough to winter on the hills, and for this purpose no cross answers. So when a change of blood is required, resort is generally had to the Welsh mountains, and this policy has been crowned with success.

As in the New Forest, there is here a Pony Improvement Society. This useful Society was formed in 1890, and already is there to be found evidence of the good work it has done. The subscription to the Society is nominal, and half-a-dozen landowners lend the Society money with which to buy stallions, the Society purchasing the horses they require. There could not be an easier way of stocking the hills with the necessary change of stallions, the landowners of course practically owning them.

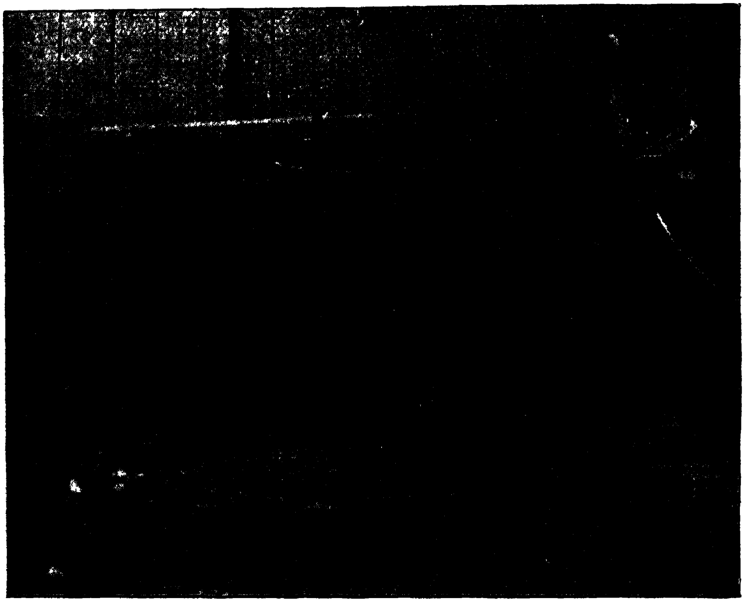

Fig. 52.—Long Mynd Pony, Turco.

The property of Mr Campbell Hyslop, Church Stretton.

The Long Mynd ponies stand from 11 to 12 hands high, and though occasionally one may be found as high as 12 hands 2 inches, they do not stand the hills so well when they exceed 12 hands. They have a good lean head, sloping shoulders, and plenty of clean flat bone; their knees and hocks are big, but the latter are near together, and the quarters are short and droop a little. They are especially fine on their withers, and are the narrowest here of any ponies I saw, a fact which adapts them admirably for children's ponies. The favourite colour is brown or bay; grey is admitted, but not liked; and chestnut, unless it is very dark, finds no favour in the eyes of breeders. Occasionally, but only occasionally, a cream-coloured one, some case of atavism to the Norwegian cross, is seen.

The best go for children's ponies, and for this purpose there is a big demand, and the others are eagerly bought up as pit-ponies. Church Stretton Fair is a good market, but there is so good a demand that dealers pick up the best privately.

I cannot conclude better than by describing Turco (fig. 52), a typical stallion owned by Mr Campbell Hyslop, of Church Stretton. Bred on the hills, Turco is a perfect *multum in parvo:* bay in colour, he stands about 11 hands 3 inches; he has a good lean head, a bright and full eye, beaming with intelligence, a muscular back, with well-sprung ribs, and his quarters nicely turned. His hocks are long, flat, and well shaped, but rather too close together; he has about 7½ inches of clean flat bone, and excellent feet. He is a fine mover, and as hard as nails, capable of going from morning to night in a light two-wheeled conveyance suitable for a pony of his size.

THE FELL PONIES.

Very different are the conditions under which ponies are bred on the Fells of Cumberland and Westmoreland to those which obtain on the moors and in the forests of Devonshire, Somersetshire, and Hampshire, or in the Shropshire and Welsh hills. High and wild as are the fells, they have some good grass on them, and it is certainly better in quality than that which falls to the lot of the other breeds of which I have written.

History has little to say of the Fell ponies, neither, strange to say, has tradition, though, as is the case with the Herdwick sheep, I have heard a whisper concerning the Spanish Armada. The ponies have been on the fells in the time of the statesmen, and their fathers and grandfathers for countless generations. There seemed to be a general opinion that the ponies have decreased in number, and have in some measure lost their character, and grown bigger, or perhaps it would be more accurate to say leggier. One owner informed me that ponies have been bred and crossed till they have lost their bone and grown narrow and slight, and that recourse has now been had to stronger ponies to recover the bone and substance; but this seems to be nothing more than what has taken place with other breeds. Crossing does not stand much in favour with breeders, though one of them remarked an Arab cross might be beneficial.

The management of the ponies differs materially from that in the south: no stallions are allowed to run on the fells, and though some men who occupy large allotments turn a stallion out amongst their mares, in a majority of cases this course is not adopted. The mares are turned away on the fells in the autumn like sheep, and take their chance in much the same way. Some owners bring them up into rough pastures nearer home as foaling-time approaches, but a great many owners let them take their chance on the fells. The Fell ponies stand from 13 hands to 13 hands 2 inches, and occasionally one is found an inch higher. They are stronger and stouter than are any of the breeds of which I have written, and are scarcely so much like the saddle as any of them. They have sweet heads, have the best of feet and legs, and immense bone for their size, and they are capable of drawing great weights.

There is a very ready sale for them, Brough Hill Fair being one of the best markets. Bampton, which has some 6000 or 7000 acres of common land, is a great stronghold for ponies, and of late Brough Hill dealers, too anxious to wait for the fair, have gone on to Bampton and bought largely. The ultimate destination of the ponies is the main seams in collieries. Stainmoor was once a great place for ponies, but there are few to be found there now, a great deal of the common having been taken in and allotments made. Though all the breeders on the fells seem opposed to a cross of any sort, there is no doubt that the Fell pony crosses well with the Hackney, so far as a first cross is concerned. The second or third cross, or the results of the cross bred amongst themselves, might not be so successful, and the coarse heads might crop up of which I heard so much when a cross is resorted to. I saw a pony by a Hackney sire out of a Fell pony mare at Mr Noble Ewbank's, and she had certainly no coarseness about her. Indeed she showed considerable quality, had nice carriage, plenty of bone, and went in nice style, using her shoulders and her hocks as well as her knees.

A Fell pony stallion I saw merits a word. He is a black, standing nearly 13 hands 3 inches, named Young Merry John, and is owned by Mr Birkett of Bampton, for whom he has travelled the district nine seasons. He is lengthy, with a good head and eye, his back and loins are powerful, his shoulders well placed and so deep that they take a 26-inch collar. He has immense arms and thighs, great bone below the hock, and stands over a lot of ground. His substance may be easily imagined when I say that he measures 9¼ inches below the knee. He certainly looks more like harness than the saddle, though his action is smooth enough for the latter, and I was not surprised to hear that he has done much in improving the breed in the district in which he has travelled.

THE SHETLAND PONY.

It now only remains for me briefly to notice three breeds of ponies—the Shetland, the Hackney pony, and the Polo-pony. It would be a work of supererogation for me to enter largely into details concerning the Shetland pony, for more is known of him than of any other breed, and only three years ago an exhaustive article appeared in the 'Transactions,'[1] by Mr Robert Brydon, than whom none is more competent to speak of the subject. The smallest of the pony race, the Shetland is also the strongest for its inches. In size they generally range from 9 to 11 hands high, and they are usually as wide as little cart-horses. It is said that when care is taken in mating they will average about 9 hands 2 inches, but where this is not the case they will average a hand higher.

A considerable majority of the mares are in the hands of crofters, and these ponies have a hard life of it. They are turned off on the hills, and as winter goes on and the food supply on the hills fails they approach the sea and live on sea-weed and anything they can pick up. If heavy snow comes on they crowd about the houses, and generally get a sheaf of corn to nibble at. It stands to reason that they get weak before winter ends, and it is not till after midsummer that they fully recover their strength. Under these circumstances it is not to be wondered at that the crofters' ponies do not often breed more than once every two years.

Lord Londonderry is, as is well known, a large and successful breeder, and to his enterprise and that of other landowners the great improvement which has been made in recent years is principally due. The establishment of the Shetland Pony Society and the publication of a Stud-Book have also done much in this direction, and the policy of the Society in fixing the height limit a low one is much to be commended as tending to preserve the type of the Shetland. The value of the breed for work in the narrower coal measures does not require any comment, the large averages made at some of the sales being sufficient testimony of this,—on one occasion the Seaham Harbour lot making the splendid average of £28, 8s. 11d. for forty-three.

THE HACKNEY PONY.

Little need be said of the Hackney pony, for he is to be seen at his best at almost every agricultural show. Mr Christopher Wilson of Rigmaden has made a speciality of breeding these handsome and stylish little animals; and other gentlemen, notably Sir Humphrey de Trafford, and Mr William Hollins of Pleasley Vale, have entered keenly into the business. Fell ponies and some of the Welsh ponies seem a good foundation on which to begin; and doubtless many of the best of the Hackney ponies can trace their descent on the dam's side to one or other of these sources.

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[1] 'Transactions.' Fifth Series. Vol. vi., 1894.

POLO-PONIES.

Like the Hackney pony, the Polo-pony (fig. 53) is decidedly an "artificial" breed, and anything that is the right size and fast enough and strong enough will do to play polo upon, no matter how he is bred. But the increase of polo-playing has drawn attention to pony-breeding, for it is difficult to say what a really high-class Polo-pony is worth. In the Exmoor, the Long Mynd, and the New Forest ponies there seems an excellent foundation for Polo-ponies, and those breeds cannot but profit from the increasing demand for polo- and riding-ponies.

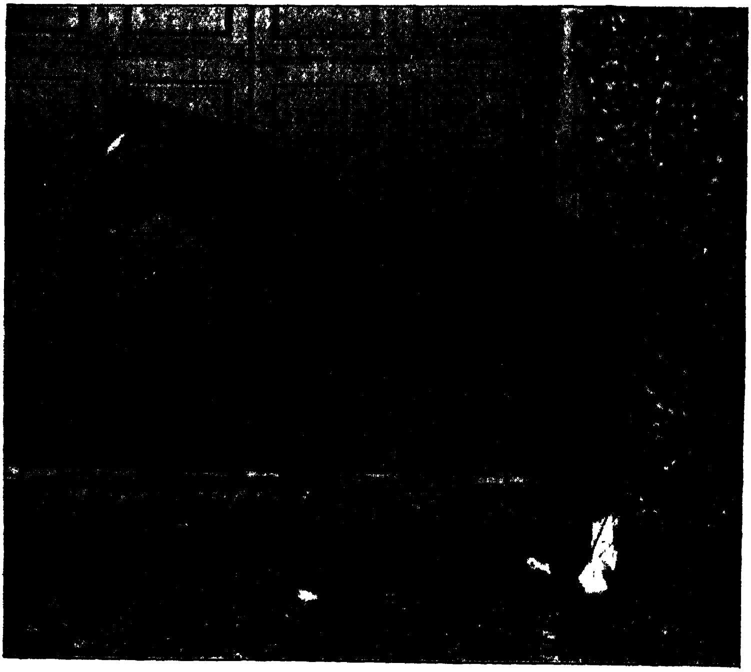

Fig. 53.—POLO PONY.

CONCLUSION.

The British breeds of ponies—the Exmoors, Dartmoors, New Forest, Long Mynd, and Fell ponies—seem to me to be so nearly related, that no harm could possibly accrue to any of them by a judicious crossing amongst themselves. It may be objected that the cross-bred ones would not stand the climate so well as those whose parents on both sides had both been brought up to it from generation to generation, and there is force in the objection. But all the ponies that are bred are not required to go out on to the hills or into the forests, and pony-breeders should remember that there is an increasing demand for good ponies. But in crossing it is good to bear in mind the locality in which the foal will have to be reared. As Lord Arthur Cecil admirably and forcibly puts it, "It is futile to attempt to breed animals larger than the ground on which they are bred can carry, for, if this is attempted, symmetry and constitution disappear at once, and an animal is produced which is neither able to live in a natural manner on its native ground, nor is good enough to breed the higher types of ponies classified as Hackney or Polo-ponies."

In conclusion, I must tender my thanks to those gentlemen to whom I am indebted for much valuable information, and for the trouble they took in showing me as much as could be seen in the shortest possible space of time. In this respect my thanks are especially due to Lord Arthur Cecil, Mr Gerald Lascelles, Mr John Hill of Felhampton Court, Mr Campbell Hyslop, Mr John Squire, Mr Birmingham, Mr Thristle, and Mr George Armstrong, and to others too numerous to mention here.

HALF-BRED SHEEP.

By Alexander Guild, Greenhead, Pencaitland.

It is at all times an agreeable task for an advocate to hold a brief for a cause of whose justice the advocate possesses undeniable proofs. The task is still more agreeable when the advocate and many of his friends have derived, and are continuing to derive, handsome profits from the cause which it is his duty to submit for favourable consideration. That is precisely the position in which I feel myself in stating the case for the half-bred sheep.

During the comparatively short term of years in which I have held a farm on my own account, I have handled half-breds extensively, and invariably found them a most useful and profitable class of sheep, and my experience in this respect is precisely the same as that of my many friends who are engaged in the breeding and feeding of half-breds and their half-bred or cross-bred stock. One of the early devotees of the breed—namely, the late Mr Scott of Timpendean—was often heard to affirm that he never knew any skilful and enterprising flockmaster who failed to make money if he stuck to the breeding and feeding of half-breds. This emphatic statement is warmly indorsed by a veteran and much-respected farmer, whose name is "familiar as a household word" in the agricultural world. I refer to Mr John Clay, that able representative of the tenant farmers' interests on the Royal Agricultural Commission, who emphatically says that he found the breeding and feeding of half-bred sheep the most profitable branch of his extensive and varied farming operations, and that as a matter of fact any money he ever made at farming was mainly made off half-bred sheep. Abundant evidence might be cited in support of the contentions of these "Scots worthies" as to the superior merit of the half-bred sheep, but it is not necessary to do so.

In these times of low prices for agricultural products, when the fierce competition with the foreign producer has made utility the one supreme test of merit, the extent to which the half-bred has spread over the country is an outstanding and incontestable proof of the superior merit of the breed. It is therefore a matter of surprise that this most valuable breed should in the past have received such scanty recognition alike from our National Agricultural Society and from our many able writers on farm live stock. It is satisfactory, however, to find that this year at the forthcoming Glasgow Show there is to be a section for half-breds, and it is to be hoped the breed may now always be found in our National Show. By way of showing that half-bred sheep have not received from our leading writers on farm live stock a degree of attention which is at all commensurate with their merits and numbers, I shall cite two typical cases, the one English and the other Scotch. Mr John Wrightson, President of the College of Agriculture, Downton, who is a prominent and prolific writer on agricultural subjects, published a few years ago a popular handbook on 'Sheep Breeds and Management,' and in this book all the notice that is taken of half-bred sheep is contained in the following passage:—

"A favourite cross for producing a hardy and prolific ewe flock is that of Border Leceister rams mated with Cheviot ewes, and these again put to Leicester rams, giving a strong and kind progeny which may be brought out fat at a year old at from 16 to 20 lb. per quarter. Such ewes are well adapted both for the richer land that forms the valleys and the fells which enclose them. They are a frugal race, requiring but little water, and thriving upon the poorer pastures of the mountain limestone and the millstone grit. These sheep fatten easily without hay, and do not require so much indulgence in the form of cake and corn as some of our South Country down breeds. Oats and pea-straw, with a pint of home-grown oats and plenty of white turnips, is all they require in winter, and in summer they have nothing but grass. The fault of the 'bred ewe,' or Border-Leicester, is that she makes herself too fat upon good land, and hence the Cheviot cross or the Cheviot twice crossed is preferred for the poorer lands as hardier and better adapted for the poorer soils."

I purposely refrain from commenting upon these sentences beyond remarking that they read strangely in a handbook written by the Principal of an Agricultural College. Very different, in respect to language and reasoning, is the typical Scotch case which I propose to cite—namely, the reference made to half-bred sheep by the late Mr John Usher of Stodrig in his published writings. Mr Usher, "the Nestor of the Borders," as he has been well called, wrote a delightful book—a perfect prose poem—on 'Scottish Breeds of Sheep,' in which he set forth in glowing terms the achievements of the leading breeders of Border-Leicesters, Cheviots, and Blackfaces; but he referred only incidentally to the half-breds as if they were a sort of *half-caste*, and were unworthy of recognition as a "Scottish breed of sheep."

It has to be remembered, also, that one of the most important uses to which two of the three "Scottish breeds of sheep" eulogised by Mr Usher—namely, the Border-Leicesters and the Cheviots—are put, is the mating of these two breeds with each other for the production of half-breds as a commercial rent-paying class of sheep, which admirably suit the wants of both producer and consumer. The half-bred is not an aristocrat whose claim to national recognition is largely based on the fact that he is descended from a long line of distinguished ancestors, whose names and flock-book numbers are all registered in the Peerage Roll of the breed. Neither is he an aristocrat in so far as he can show a long line of fancy prices, for, so far as I know, the highest price ever paid for a half-bred ram was £34, paid in 1894 at the Kelso Ram Sales by Mr Lyal, Greenknowe, to Mr Scott, Alnham; the next highest price being £31, paid at the Kelso Sales in 1895 by Sir William Crossman, Goswick, for a ram bred by Mr Elliot, Newhall. Neither can it be said that the half-bred has had the benefit of much aristocratic patronage, apart from that of the Duke of Northumberland, who has a large and valuable flock of half-breds at Alnwick Park. Indeed the claim for more prominent recognition of the half-bred is based solely on the fact that this breed combines in a remarkable degree the best qualities of both the Border-Leicester and the Cheviot, and is emphatically a rent-paying and most profitable class of sheep. As a warm supporter of the half-bred, therefore, I have great pleasure in pressing the claim of this breed to a more just and generous recognition than it has received in the past.

An inappropriate Name.

It is much to be regretted that such an unfortunate name was chosen for the breed. To flockmasters in Scotland and the north of England the name of Half-bred is well enough understood as designating the breed derived from the union of the Border-Leicester ram with the Cheviot ewe. But to any one who is not acquainted with the Scottish breeds of sheep the name "half-bred" conveys no definite and accurate idea of the nature and origin of the breed. Perhaps I should rather say it conveys a very misleading idea of the nature and origin of the breed, for as a matter of fact any sheep which is a first cross between two distinct and well-recognised breeds—the Greyface, for instance—may very appropriately be named a "half-bred." The want of an appropriate name for the breed has been fully recognised before this, for in 1889, when the Show of the Highland and Agricultural Society was held at Melrose, in the very heart of the "half-bred" district, and handsome prizes were provided for half-bred sheep, with the result that a splendid show of this breed was made on that beautiful site at the base of the classic Eildons, a proposal was widely advocated to have the name of the breed changed to "Upland Leicesters." The proposal, however, did not meet with general favour, and was shortly afterwards abandoned. For my own part, I think that either of the names "Leicester-Cheviots" or "Cheviot-Leicesters"—personally I should prefer the former—would be a much more appropriate name, as indicating the fact that this breed was derived from the union of the dominant breeds found on "Bonnie Teviotdale and Cheviot's mountains blue."

The Origin of the Breed.

With regard to the origin of the breed, we at this distant date have no very accurate information as to who were the first flockmasters to systematically produce half-bred sheep by mating the Border-Leicester ram with the Cheviot ewe. We do know, however, that some considerable time before the record reign of Queen Victoria commenced sixty years ago, half-bred sheep were produced in this way; and we know also that the late Mr John Borthwick of West Newton, and his son Mr Charles Borthwick of West Newton and Mindrum — now a veteran of 87 years of age—together with the late Mr Elliot of Lamberton, have always been justly regarded as the great founders of the breed. When the system of mating Border-Leicester rams with the Cheviot ewes for the production of half-bred sheep was once commenced by these old pioneers of progress it spread rapidly, as it was found that the lambs so produced grew bigger and could be brought to maturity much more quickly than Cheviot lambs, while their mutton was of exceptionally fine quality, in which respect they were much superior to the Border-Leicester. Another point that told greatly in their favour in those days was the fact that the sheep of the Leicester-Cheviot cross carried a heavier fleece than the Cheviot, and its wool was as valuable per pound as that of the Cheviot, while it was much more valuable than that of the Border-Leicester.

At that time it was the invariable custom of breeders to have both the ewe and wether lambs of the Leicester-Cheviot cross sold for fattening purposes to feeders, who disposed of them in the fat markets after the animals had been once clipped. Before long, however, flockmasters discovered that the Leicester-Cheviots were admirably suited for the uplands intermediate between the low grounds occupied by the Border-Leicesters and the higher grounds stocked with Cheviots. The result was that some of the Leicester-Cheviot ewe lambs were retained in a tentative way for breeding purposes, and were mated with Border-Leicester rams to produce what are called three-part-bred lambs. The Leicester-Cheviot ewes proved so remarkably prolific and such excellent nurses—they having a great flow of milk—that this system spread very rapidly over all the south of Scotland and the north of England, more especially as the three-parts-bred lambs produced from the half-bred ewes were very popular then with feeders. The lambs laid on flesh even more rapidly than the half-breds, and though their mutton was rather heavily loaded with fat, the public was not then so fastidious in its taste for lean meat as it is now. This rapid extension of the system of using Leicester-Cheviot ewes for the breeding of three-part-bred lambs caused a great demand for the Leicester-Cheviot ewe lambs, and materially increased the average value of draft Cheviot ewes.

About that time, also, the high prices for grain led to a great extent of comparatively high-lying pasture-land being broken up, as in Gala Water for example, and this increase in the area of arable land in the higher districts gave a great impetus to the breeding of half-bred sheep, and still further increased the demand for half-bred ewe lambs, so much so that they realised much higher prices than half-bred wethers of similar age. In time this demand for half-bred ewes and ewe lambs was accentuated by the fact that on many of the lower and well-sheltered farms the Cheviot stocks had been displaced by half-bred ewes carrying or nursing three-part-bred lambs.

This led to the adoption, some fifty years ago, of the system of mating half-bred rams with half-bred ewes in order to enable breeders to retain their best ewe-lambs for breeding uses instead of having to buy Cheviot ewes or ewe-lambs at the high prices then current. This system spread very rapidly, particularly in Northumberland, and was found to be pre-eminently satisfactory. The half-bred sheep so produced were very hardy, and grew more rapidly and to much heavier weights than the half-breds of the first cross; while their mutton was of exceptionally fine quality, and exactly suited to the altered taste of the consumer, who now objects to mutton which is as fat as that of the three-part-bred. The plan of mating half-bred rams with half-bred ewes is now all but universally adopted in half-bred breeding flocks; and as a matter of fact half-breds of the first Leicester-Cheviot cross are now practically confined to flocks kept for the production of high-class rams.

Half-Breds and *Half-Breds.*

From what has been said above it will be seen that there are half-breds and half-breds. On the one hand, there is the half-bred of the first cross between a Border-Leicester ram and a Cheviot ewe; and on the other, there is what may, by a curions misuse of language, be called the "pure half-bred," produced by the union of the half-bred ram with the half-bred ewe. As between these two classes of half-breds there still lingers a strong prejudice in favour of the half-bred of the first cross, particularly in the case of rams intended for breeding purposes. At the great ram sales at Kelso, where most of the best shearling rams of the best Border-Leceister and half-bred stocks in the country are exposed for sale, all the half-bred rams there exposed are understood to be of the first cross, and, other things being equal, a half-bred ram got by a half-bred sire would not realise so high a price as he would if he were a first cross. I know of several cases, however, where at leading shows half-breds, which were afterwards admitted by their owners to be "pure half-breds," have justly carried the premier honours when competing against the best half-breds of the first cross in the country. On this point Mr Elliot, Newhall, one of the most eminent breeders of half-breds, writes as follows:—

"In some minds there is a prejudice against the half-bred and half-bred breed, but in every instance where the rams are selected with judgment and care they can be bred in this way for any length of time without deteriorating in size, style, or value. In this part of the country we have many instances of flocks that have been bred in this way for the last twenty-five years, and have not only been successful, but are growing daily more in favour. Although it is usual to have the rams of the first cross, I am quite convinced that it is perfectly practicable to breed them 'pure half-bred,' and have even better sheep, if done with the skill of a judge. There might be a prejudice against them for a time, but I feel confident that the result would be a success. As show animals, the ewes got by half-bred rams will always beat those of the first cross (that is to say, if they be bred with care and skill), as they show so much greater weight, which is always an advantage if you have quality along with it."

The above opinion, expressed by one of the most successful breeders, is indorsed in every particular by Mr Bertram of Addinstone, who for the last three years has had the highest average realised for half-bred rams at the Kelso sales. In fact, Mr Bertram frankly says that if he had not been induced by the fascination of winning prizes and getting high averages for half-bred rams of the first cross to leave the breeding of "pure half-breds," he would have made more money off the breeding of half-breds than he has done.

The Popularity of the Breed.

If half-bred sheep be as useful and profitable as those who have ever had them say that they are, it is only to be expected that in districts suited for the breeding of half-breds this breed will be largely represented. That the breed is largely represented in districts suited for the breeding of half-breds, and that they are very highly appreciated by breeders, feeders, and consumers alike, are facts "which nobody can deny." In the south-eastern counties of Scotland, in Caithness, and in Northumberland the breed is very largely represented.

As to the popularity of the breed, any one who requires it may get an object-lesson in that matter if he attends any one of the several great sales of draft ewes at St Boswells in autumn, where he may see 20,000 draft ewes, of which the great majority are half-breds, sold in one day. Arable farmers from all parts of the great feeding districts between the Tay and the Humber flock to these sales to purchase half-bred ewes from which to produce a crop of lambs that can be sold fat along with their dams before midsummer—the object being to force both ewes and lambs at the hardest as soon as the lambs are dropped, and get both lambs and ewes into the fat market about the same time. These draft ewes when purchased by feeders are usually mated with a Shropshire or Oxford Down ram, as the lambs of this cross are greatly appreciated by the public. In a considerable number of cases, however, the draft half-bred ewes bought by feeders are mated with a Border-Leicester ram to produce three-part-bred lambs; for although lambs of this cross are not now appreciated for "hogging" purposes, the same objection does not hold good against them as fat lambs.

As a further testimony to the superior merit of the breed, I may note that the Queen's Commissioner at Windsor—Mr Wm. Tait, than whom there is no better judge or more successful breeder and feeder of fat-show stock—is a regular purchaser of half-bred wethers to be fed on the royal farms at Windsor; and at her Majesty's annual sale of fat stock during the Smithfield week the half-bred wethers never fail to excite the keenest competition, and command high prices. As showing the remarkable capacity of the half-bred for yielding a very satisfactory "daily gain," I may also note that at the Smithfield Show in December 1896 the first prize for the best pen of Cheviot-cross wethers was won by Mr M'Dowall, Girdstingwood, with a pen of three half-breds which at 19½ months old scaled no less than 7 cwt. 2 qrs. 19 lb., so that these animals showed a daily gain of very nearly ½ lb. per day.

Points of the Half-Bred.

I may here state briefly the points which should be specially looked for in a half-bred. The head should be well covered with pure white hair; the ears should be erect and mobile, with a slight inclination forward, and well covered with white hair; the eye should be bold, bright, and prominent; the forehead should be wide and open; the muzzle should be black, and fairly wide, with good open nostrils; the neck should be strong and well set on to the shoulder; the chest should be wide, and the ribs well arched—it is a great point in favour of a sheep to be thick through the heart. The back should be straight and well carried out to the rump, with quarters wide and long. The wool should incline more to the Cheviot than the Border-Leicester in closeness, and should be very fine in staple and equal all over the body. Finally, the animal should be well planted and well balanced on fine flat-boned legs, should carry his head well, and be a good walker. In fact, he should walk as if he were conscious of his own importance.

Fig. 54 represents the first-prize ram at the Show of the Edinburgh Agricultural Association in 1896.

Pressing the Claim for the Half-Bred.

In concluding this brief and very imperfect statement of the case for the half-bred sheep, I would beg to express the hope that what I have written may lead to a more just recognition of the merits and usefulness of this valuable breed. From my own experience, which is backed by the experience of hundreds—I should rather say thousands—of others, I am confident of the fact that there is no breed of sheep in the country which has done more than the half-bred has done to enable farmers on the arable lands or lower pasture-grounds to successfully combat the intense depression which has so long and so severely tested the staying powers of British farmers.

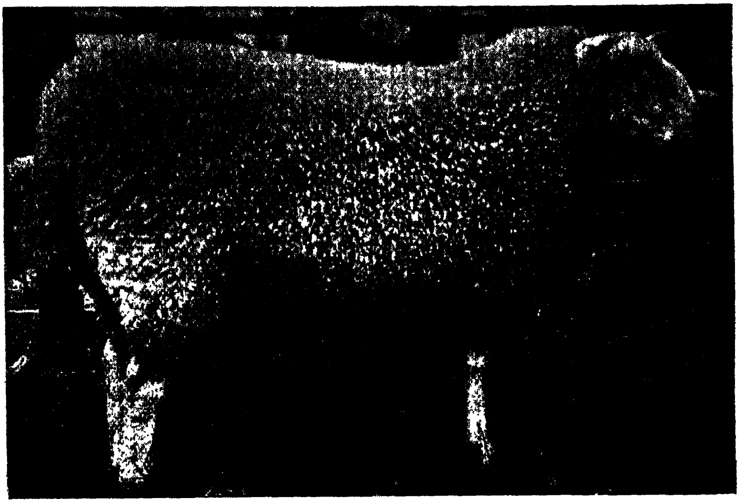

Fig. 54.—Half-bred Ram.

Winner of Champion Cup at the Show of the Edinburgh Agricultural Association, 1896.
Bred by Mr John Bertram, Addinston, Lauder.

The breeders of Border-Leicesters, Cheviots, Shropshires, and Oxfords should also see it to be for their interest to stimulate a just acknowledgment of the merits of this breed. Especially would I urge that at all future shows of the Highland and Agricultural Society there should be classes and prizes provided for half-bred sheep. To that recognition I maintain the breed is most fully and justly entitled.

THE INTERNATIONAL AGRICULTURAL CONGRESS AT BUDAPEST.

By R. H. Rew, Secretary of the Central Chamber of Agriculture, London.

From the 17th to the 20th of September 1896 an International Agricultural Congress was held at Budapest. It was arranged by the Royal Hungarian Minister of Agriculture, M. Ignatius de Darányi, who was President of the Congress and of the Executive Committee. Its objects and aims were thus officially announced:—

"Considering the present depression of agriculture, owing to the general decline of corn-prices, the sole object of the Congress will be to inquire into the causes of this decline, endeavouring at the same time to advise remedies for it."

Invitations to appoint representatives to the Congress were sent to the various European Governments and to a number of the principal agricultural associations and institutions. Among the Governments which were represented were those of Germany, France, Italy, Russia, Austria, Belgium, Denmark, Argentina, Brazil, Bulgaria, Holland, and Servia. The British Government was not officially represented, but the Royal Agricultural Society and the Central Chamber of Agriculture accepted the invitation to send delegates. A large number of representatives of Hungarian agricultural societies and a few private individuals also attended the meetings of the Congress. Altogether the number of members inscribed on the roll was 274, but there was a considerable proportion of absentees.

The Congress met twice as a whole—once to open the proceedings, and again for the concluding meeting. Both of these gatherings were more or less formal—the former being chiefly occupied by addresses of welcome, and the latter by addresses of farewell. The Minister for Agriculture presided on each of these occasions. The deliberations of the Congress were conducted in three—or rather four—sections, divided as follows:—

I. Production.
II. Commerce and Transport.
III. (*a*) Customs. (*b*) Currency.

For each section a series of questions were drawn up which were circulated in advance among the members of the Congress, so that any who were not able to attend personally could submit their views in writing. As a matter of fact many adopted this course, and a considerable number of contributions were therefore submitted to the Congress in print. The most concise method of giving an idea of the scope of the Congress and of its transactions will be to briefly summarise the proceedings in each section, premising that they met each day simultaneously, so that members of the Congress had to make their choice as to which they would attend.

Production.

In Section I. (Production) the following were the questions proposed:—

1. In what degree does the condition of production, in the various corn-producing States, influence the competition in the markets of the world? Is there any over-production?
2. If so, is this over-production to be considered as permanent, or only as temporary?
3. What influence does the international competition in agricultural produce exercise on the rentability of landed property?
4. What would be the influence upon the rentability of landed property, of a change in the conditions and relations between the various branches of agricultural production, or a change in the system of farming?
5. Under what conditions could a transition from the extensive to the intensive system of production be considered as justified?

Count Julius Szapary, Dr Krems, and M. Daubrée were elected presidents of the section.

Among the written communications laid before this section, one of the most interesting was that made by Dr W. Lexis, Professor of Political Science at the University of Göttingen. His replies to the questions above given were as follows:—

1. There is no over-production of corn, taken in the strict sense, as the whole mass of the corn produced finds customers at the present prices; but prices are so far depressed by the competition of countries outside of Europe, that the producers who are not enjoying special advantages do not make any, or at all events only a very small, profit. There is therefore no over-production, but a large amount of the necessary produce is supplied by producers possessing great advantages over the European farmer, and whose competition has depreciated and partly obliterated the historically established "ground-rent" in the European countries.

2. This ascendancy of production by the non-European countries (inclusive of Russia, and especially of Siberia) is consequently temporary, and will gradually disappear with the increasing population and the exhaustion of the soil by the

"rapacious" methods of cultivation. This process of restoring the equilibrium may, however, take yet some decades.

3. The ground-rent in the old countries becomes depreciated, and in the newly opened countries the formation of ground-rent is gradually beginning and steadily progressing.

4. Under existing conditions, changes in the methods of farming are not of any advantage unless the cost of producing the same quantity can be reduced.

5. This can be obtained with regard to certain produce, especially "industrial-agricultural" articles, by technical improvements and application of a larger capital, as well as by intensive farming methods. In agriculture there are also yet many improvements possible, such as better selection of seeds and improved manuring. Under certain conditions even the change to more extensive methods may appear more profitable, as, for instance, the afforesting arable lands of minor value.

From a number of other written communications to this section it will suffice to quote a sentence or two from that sent by Mr W. J. Harris in reply to the first question. He wrote: "Since 1890-91 there has undoubtedly been over-production of wheat. This year it may be averted. Whenever over-production takes place to any great extent prices must suffer materially, because wheat is an article that cannot be held over from year to year without great expense."

An important paper by Sir John Lawes and Sir Henry Gilbert on "The Depression of Corn Prices; and on the Production of Wheat in some of the chief exporting Countries of the World," came properly within the purview of this section. As, however, it has since been published *in extenso* in the 'Journal of the Royal Agricultural Society,'[1] it is not necessary to refer to it beyond stating that the general conclusion is rather discouraging to wheat-growers—viz., that circumstances do not indicate much prospect of a substantial and permanent rise of price.

In the debates in this section the question as to whether there is or is not over-production was warmly discussed. One of the delegates from the German Agrarian League stated that there was an under-production, and in fact a direct want, which at the beginning of the harvest of 1896 had been statistically expressed by the statement that the world had then only three weeks' supply of wheat. He was at once followed by Dr Thiel, who protested against drawing confident conclusions from harvest statistics, and observed that if the world had actually possessed only three weeks' supply a rise of price must necessarily have occurred. One or two speakers in this section criticised strongly the tendency to rely too much on statistics which were admittedly imperfect; and I ventured to make the suggestion that the Congress should appoint a committee to collect reliable data as to the wheat production of the world. One or two speakers also advocated the organisation of farmers for their commercial interests. As a matter of fact, however, no specific action was taken in either of these directions.

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[1] Third Series, vol. vii. part 4, 1896.

Commerce and Transport.

Section II. (Commerce and Transport) was not very well attended on the first day.

The following were chosen as presidents: Count André Festetits, late Hungarian Minister of Agriculture; Dr Schmoller, Professor Lavasseur, and M. Jules Duckerts.

The following questions formed the basis for discussion in this section:—

1. What arrangements are necessary, in the interests of agricultural production, for the regulation of the international traffic in agricultural produce, without interfering with the principle of freedom of commerce?
2. What means are there at the disposal of individuals, of communities, and of the State for this purpose?
3. How far is the intervention of the State necessary in the determination of the price of corn, especially with regard to the reform of rates of transport, the modification of the corn-storage (elevator) system, the organisation of the corn-trade, and the reform of corn-exchanges?
4. What arrangements and rules may be considered practicable with regard to the transactions on the corn-exchanges, especially with a view of preventing possible abuses?
5. Notably, which desiderata are to be taken into consideration with respect to options and futures, and to the qualification for entering into contracts and to the so-called admission to the register of the exchanges, as well as to the exclusion of certain kinds of produce from the dealings in futures; and finally, with regard to the standard of the various kinds of corn to be delivered, the fixing of the method by which the rate of exchange is settled, and also with regard to dealings by brokers and on commission?

It will be seen that these questions opened up at once the subject of speculation in the corn-trade, and as a matter of fact the whole of the deliberations of this section were practically devoted to this topic. The amount of interest taken in it—for the meetings of the section were well attended after the opening—was surprising to those of us who came from England, where the number of persons who even think seriously about it is very small. Several written communications on the subject were before the Congress, but as they are voluminous I will simply give a summary of the actual debate.

Count Alexander Karolyi—who is regarded as the leader of the "agricultural party" in Hungary—made the first speech. He said that he considered the cause of the decline in prices was exchange-gambling—viz., the "difference" and "time" business. This was in his opinion identical with the games of chance at Monaco. These kinds of business should be forbidden in Austro-Hungary as they had been in Germany, as otherwise it would be impossible to restore corn to its former price. He said it was not desired to take up arms against capital, but rather against the rapacity of capital. The whole Exchange was not attacked, but only certain branches of business by which agriculture was ruined.

Dr Ruhland, whose pamphlet on "The Ruin of the World's Agriculture and Trade" was the main factor in bringing about the passing of the German law against the Produce Exchanges, said the cause of the depression of prices was to be found in the machinations of large capitalists.

Dr Schmoller, professor at the University of Berlin, did not entirely agree with the views of Dr Ruhland. He thought to a large extent he was right, but his conclusions were exaggerated.

M. E. Miklos, a member of the Hungarian Parliament, gave a long address on the second day, in the course of which he urged the importance of perfecting the means of transport and making greater use of waterways. He also urged that great advantage would be gained by the creation of a network of corn-elevators along the lines of traffic. The third great task which awaited accomplishment referred to the Bourse. This he considered to be an economic institution, a necessary factor of developed political economy; but he wished to preserve it from degeneration. He recommended that the Government should consider whether it would not be desirable to separate entirely the real from the fictitious business of the Exchange, even if the latter could not be entirely abolished. He hardly believed it possible to do away entirely with gambling, but those concerned should not bring the credit of agriculturists into their gambling, but rather risk what they themselves had to lose.

Dr Ruhland and Dr Rösike, both of whom represented the German Agrarian League—"Bund der Landwirthe"—described the objects of that organisation. The latter asked Hungarian farmers to follow the example of the German League, so that "usury in corn" should cease in that country. The German Government, in consequence of the agitation of the League, had abolished "time-bargains" on the Exchange.

On the third day Chev. Rudolphe Walcher-Uysdal, representative of the Austro-Silesian Agricultural Society, urged, firstly, that Governments should annually publish international statistics; and secondly, that "time-bargains" should be limited or entirely abolished.

Count Robert Zselenszky, a member of the Hungarian Parliament and one of the largest landowners in Hungary, said that the most important subject of the Congress was that relating to terminal dealings in corn. There is a movement throughout the whole world against this speculation, which had depressed the price of corn in an artificial way to such an extent that in corn-producing districts an actual state of distress had been brought about. What would happen if speculators, in the case of a war or other calamity, drove up the price of corn excessively? Distress would then occur among the consumers of corn. Speculation in "differences" threatened to destroy the benefits of modern civilisation, and time-bargains are consequently to be condemned. He observed with pleasure that the majority of speakers at the Congress had pronounced in this sense.

Mr Charles W. Smith—who took an active part in the proceedings of this section—explained the manner in which "futures" and "options" tend to depress prices, and urged that agriculturists in every country should work unitedly in order to put an end to the gambling which is so injurious to their interests.

No one attending the Congress could fail to be impressed—even if he was not convinced—by the enthusiasm with which many of the delegates advocated "reform of the Produce Exchanges" as the foremost necessity for the benefit of agriculture. The outline of the discussion above given will suffice to show the representative nature of the support given to this view. Of course it must not be assumed that all the members of the Congress were of one mind on the subject. I spoke with several who took the opposite side, though they did not attend this section or speak on the subject.

It is perhaps only fair—having given so many on one side—to quote the opinion of a high authority, Dr W. Lexis of Göttingen University, as given in a written communication. He was present at the Congress, but did not attend Section II. He wrote:—

"It is doubtful whether any advantage could be obtained for agriculture by the restriction of the business on Exchange. In Germany it will soon be felt that the prohibition of futures in grain is doing more harm than good to agriculture, as by it the market has been restricted, and the power of the large capital has been enhanced with a consequent larger fluctuation in quotations, which involve a greater risk for trade, the cost of which must be borne by the producers. The operations in futures may become a public nuisance by animating persons outside the sphere of business to gamble; but it is a prejudice emanating from an incorrect conception of the actual facts to pretend that its inherent tendency is to act always counter to the interests of agriculture, and to depreciate prices. The operations in futures have simply the effect of expressing the real factors of the market's tendency. The action of the real factors, especially of the supremacy of the trans-oceanic competition, is to depreciate prices in Europe; and it is for this reason, and not out of hostility to agriculture, that the 'bear' tendency in the operations of futures predominates. If there are real reasons for a rise of prices, the speculation in futures at once turns to 'bull' operations."

It is of course necessary to remember that the law in Germany abolishing "time-bargains" had—at the time of the Congress—been passed, but had not come into operation. Consequently both its advocates and its opponents were uncertain as to its precise effects.

I certainly do not propose to express here any opinion as to the merits of a controversy the very phraseology of which almost requires a special education to understand. But I have no hesitation in saying that this question of the effect of the "option" and "future" systems on agricultural prices has come so far within the sphere of practical politics as to make it desirable that an effective inquiry should be made. The Council of the Central and Associated Chambers of Agriculture some time ago asked that an inquiry should be instituted by the Government, and there is little doubt that investigation by a Departmental Committee or by a Select Committee would enable either the truth or the fallacy of the views so largely held among agriculturists on the Continent to be effectively tested.

Customs.

Section III., as already mentioned, was divided into two subsections, for "Customs" and "Currency" respectively. Subsection (*a*) dealt with the former subject.

The presidents chosen were Count André Bethlen; Herr von Ploetz, President of the German Agrarian League; and the Hon. Cecil Parker. The last-named, who was one of the representatives of the Royal Agricultural Society, took no active part in the proceedings.

M. Molinari, editor of the 'Journal des Économistes,' was the first speaker, and directed attention at once to the idea of a "Central European Customs Union," which practically engrossed the section during the whole of its proceedings. He said that in 1878 he laid the idea of such a Customs Union before Prince Bismarck, who promised after some demur to study the question if the concurrence of a single one of the interested States was obtained. He—M. Molinari—obtained the concurrence of the French Finance Minister of the time, by whose advice he also obtained the assent of the Finance Ministers of Belgium and Holland. Thus he could have formed a partial Union, but Bismarck's objections were not to be overcome. He had not, however, relinquished his endeavours, but had continued to urge the idea in the public press. It was not buried, but, on the contrary, the opportunity was never more favourable for bringing forward the proposal for a Central European Customs Union. In England, Russia, and the United States competition increased unceasingly. How useful it would be to oppose to that a Customs Federation with 130 millions of consumers! and nowhere was the soil for such action more advantageous than in Hungary.

These views were in substance endorsed by Dr Schmoller, and by Chev. A. de Hohenblum, a delegate of the Austrian Agricultural Society. But they were opposed by most of the other speakers, either as inopportune or impracticable. M. Sagnier, editor of the 'Journal d'Agriculture,' and one of the delegates of the French Government, protested strongly against the idea of a Central European Customs Union, from which, he said, France had nothing to gain and everything to lose. Count Alexander Karolyi expressed approval of the idea in theory, but considered that the difficulties in the way of such a scheme were too enormous, and this attitude was adopted by several other delegates. Of course, there was practically no difference of opinion as to the advisability of import duties on agricultural products—indeed free traders were not likely to join this particular section.

Currency.

The sub-section devoted to Currency attracted by far the largest attendance, and aroused the keenest discussion. Bimetallists and monometallists fought out their differences most energetically, and at times the controversy became quite exciting. The former were apparently in greater force, but the latter were well represented both in numbers and ability. The following were the questions officially submitted to this subsection:—

1. What are the causes of the change in the ratio of the precious metals?

2. What influence has this change in the ratio upon the formation of prices of agricultural produce?

3. What would be the consequences to agriculture of the re-establishment of the former ratio of silver under a bimetallic union?

4. Is there any prospect of an understanding between the various States for the purpose of fixing the relative value of the two precious metals?

The presidents of this section were M. Etienne de Rakovsky, President of the Hungarian Account Department; Count Eugene Faina, representative of the Italian Government; and M. Timiriaseff, head of the Russian Agricultural Statistical Department.

At the opening of the proceedings Mr Granville Smith of the Bimetallic League read a letter from Lord Aldenham regretting that he was unable to be present to impress the importance of "the remonetisation of silver and its free coinage in the mints of the principal nations of the world at one and the same fixed ratio."

The discussion was opened by a prominent German leader on each side—viz., Dr W. Lexis and Dr Otto Arendt, the former attacking and the latter defending bimetallists. These were the chief speakers on the first day, which on the whole was comparatively dull. The section got much more lively on the second day. The debate then lasted for five hours without interruption, and was followed by the numerous audience with close attention.

It would, of course, be quite impossible to give any fair representation of the discussion, which embraced the whole complicated subject of the currency. M. Yves Guyot made a very vigorous attack on the bimetallist position, and he was supported among others by Mr H. Le Roy Lewis, and notably by M. Lavasseur. But the supporters of bimetallism predominated in numbers. The position taken up by the Hungarian representatives was interesting in view of the fact that in that country a gold standard is just being established. A very representative Hungarian landowner, Count Emerich Szechenyi, spoke on the third day as a convinced bimetallist. He said if M. Lavasseur or any other monometallist possessed property in Hungary he would certainly be a bimetallist. But after arguing strongly in favour of bimetallism he concluded by saying that, looking at the position of the world as well as at the commercial and economic ties which Austria-Hungary had with Western Europe, they could not in his country think of bimetallism, but must push forward on the path already entered upon towards a gold basis.

Another representative Hungarian, Dr Mandello, secretary of the Society of Political Economy in Budapest, spoke against bimetallism. He said the possibility of the introduction and maintenance of bimetallism cannot theoretically be denied if all the great States, including England, combined in a Union, but "the bimetallic argument is in almost every part erroneous."

Conclusions.

As no resolutions were allowed to be submitted, it is impossible to say that the Congress arrived at any conclusions. Nor, indeed, were any of the questions considered by the Congress as a whole, so that at most only the opinion of a section could be in any way arrived at. The result, naturally perhaps, is that various claims are made as to the "results" of the discussions. The bimetallists, for instance, met in conclave at the conclusion of the Congress and claimed that in certain respects it had supported their views. The opponents of the "future" and "option" systems also claim the verdict of the Congress in their favour. As a matter of fact, such claims can neither be substantiated nor contradicted.

There were really four main questions around which debate more or less revolved—viz., (1) Bimetallism, (2) Futures and Options, (3) A Central European Customs Union, and (4) The existence of over-production.

As regards bimetallism the honours of debate were fairly divided, but it seemed probable that of those who actually attended the section the majority were in favour of the double standard.

In the section where "Futures and Options" were discussed the average attendance was somewhat small, and the discussion was not very well sustained; but it is fair to say that every speaker, with only one or two exceptions, condemned the systems, and that no one actually came forward to defend them.

On the whole, the formation of a Central European Customs Union may be considered to have been discouraged. It was prominently brought forward, and, as a matter of fact, hardly any one of influence was found to seriously champion it as a practical measure. This was, at any rate, a distinct gain.

As regards the existence of over-production, the most confident assertions were made on each side, and some of them were supported by figures. But in too many cases the conclusion was arrived at first, and arguments and facts were then collected to justify it. The true reply was not greatly advanced.

The full proceedings of the Congress are to be published, and undoubtedly they will comprise a large quantity of valuable information. Many of the papers and speeches were elaborately prepared, and deserve to be placed on permanent record.

A number of interesting excursions were arranged during the time of the Congress, including a trip (extending over two days) to the State farm at Mezőhegyes, and the hospitality extended to foreign visitors was of the most lavish and friendly description. After all, the chief results of such gatherings are not to be found in its printed records, but rather in the general interchange of opinion and appreciation of other's views and habits of thought, which come by the meeting on a common platform of those who are usually severed by long distances.

RURAL DEPOPULATION IN SCOTLAND:

BEING AN ANALYSIS OF ITS CAUSES AND CONSEQUENCES.

By Dr John W. Paterson, F.H.A.S.

I. Introductory.

In taking up the question of Rural Depopulation we enter upon one of the most generally popular topics of the day. It is popular for various reasons. It is popular with the cheap journalist and a certain class of politician because it is an easy subject to generalise upon. It is popular with the historian because he finds it in accord with the social developments of the past. It is popular with the statistician because it is eminently a subject for exact inquiry, and with the economist because of the numerous weighty points which it raises. It is popular with the hygienist because of its acknowledged relation to public health, and with the poetically-minded because of the halo of sentiment which surrounds it. It is popular with every thinking man because of its all-round importance.

Definition of Rural Population.

But while rural depopulation is such a popular subject, and consequently so much discussed, it is not quite certain that every one uses the expression in the same sense. For example: in the ten years 1881-91, the urban population of England and Wales increased by 15·3 per cent, while the population of the rural sanitary districts also increased by 3·4 per cent. There was no real decrease in the number of the rural inhabitants, so that using the phrase *absolutely*, we cannot here speak of rural depoplation. But when we compare the percentage which the rural population formed of the whole population in 1881, with the percentage which it formed of it in 1891, there has been a kind of decrease. It is not an absolute decrease, but it is a *relative* one, and "rural depopulation" has sometimes been used in this sense. It is scarcely necessary to point out that this is an undue straining of the meaning of the term, seeing that density of population itself is an actual and not a relative thing. In this inquiry, therefore, we shall consider actual or absolute decreases of population only.

What is Town and what is Country?

But it is not only the word "depopulation" which is capable of a double meaning; the word "rural" is even more ambiguous. It is easy to distinguish the country from the town in a general way, but for our present purpose it is not at all so easy. Indeed the settlement of this point is so freely arbitrary, that writers on the subject have generally followed a particular system of their own in making the distinction. Some have classed as "rural" those towns of considerable size whose inhabitants have been for the most part engaged in agriculture, leaving what might be smaller towns whose population was principally engaged in manufactures to be classed as "urban." This method of classification seems undesirable, however, because it is based upon a consideration which is intrinsically foreign to the subject of the inquiry itself. Its only recommendation is to be found in the accidental fact that no very large towns are found whose inhabitants are chiefly engaged in agriculture, and that in an advancing state of society, exclusively manufacturing towns are likely soon to increase in size. Another class of investigators have gone solely upon the question of population, and this is obviously the proper test to apply; but towns of very different sizes have been taken in different cases as the minimum. Sometimes 20,000 has been suggested as the population which would justify a town being called a "town," sometimes 10,000, sometimes less. In an able paper by Dr Ogle on "The Alleged Depopulation of the Rural Districts of England and Wales," published in the 'Journal of the Royal Statistical Society' for 1889, 10,000 was first taken as the minimum population of the "towns" in the area under consideration; all the population outside those towns was classed as "rural." When an investigation of those rural districts was made, it was found that a decrease of population had taken place in thirty years amounting to less than 1 per cent. A second calculation was then undertaken for the same area, in which the "towns" were determined by a 5000 limit instead of 10,000 as before, all the population outside those towns being again classed as "rural." What was the result? The rural population under the new designation of "town" was found to have decreased more than twice as much as when only towns of 10,000+were considered, while the towns of 5000 to 10,000 which had been included as rural in the previous calculation had increased by about 15 per cent. It seems to me that if small towns of 5000 can go on increasing at the rate of 15 per cent in thirty years in the midst of a district which had otherwise suffered a considerable absolute decrease of population, these small towns must surely thrive under widely different conditions than the country at large, and cannot, consequently, for our present purpose be classed as rural at all. Indeed in the light of this example, and keeping the special character of the Scottish towns in view, it is necessary to go even further down than 5000 to fix the limits of what constitutes a town a "town," if we are to measure the progress of the truly rural population. And this is indeed done in the official returns of several countries. In the census of Ireland the population is classed as "rural" which lives outside towns of 2000 inhabitants. In Germany the same standard is employed in fixing the absolute and relative increase of town and country. For our present purpose and in our present design, it is fortunate that the same method is followed in the Scottish census. We shall take as "towns" all places of 2000 inhabitants and upwards, and call all the population living outside these "rural."

Another difficulty which seems to surround the word "rural" is the fact that immediately outside a town or city boundary there is frequently a numerous suburban population, so that even although we exclude all towns of a certain size, nevertheless a number of what may be called town hangers-on will be reckoned along with the rural population. This certainly seems unfortunate; but after all, as already remarked, we must not confuse the phrase "rural population" with "those who are engaged in rural pursuits." And this difficulty can never lead to very serious error, because if such a suburban population becomes sufficiently dense and townlike, the registration boundary of the city to which it belongs is quickly extended to include the new growth. Such an extension of boundary occurred in the cities of Glasgow and Aberdeen in 1891, and examination of successive censuses shows that the boundaries of Scottish towns had frequently been changed since the preceding census and the proper corrections made.

Rural Depopulation in other Countries.

Before going on to consider in regard to Scotland the question of rural depopulation as we have now defined it, it is desirable that we should look for a moment to see if the general phenomenon is unknown in other countries of the world. We find that it is not. In France, for example, at the present time the rural districts are known to have suffered in some cases very serious depopulation. Thus at 1886 of the 87 *départements* 29 had decreased altogether, while, considered in reference to their rural populations only, no fewer than 59 had decreased since 1881. The result was a net decrease of rural population for the whole country during the preceding five years. And depopulation was even more marked at 1891. In Germany the rural population in 1890 numbered 328,290 less than in 1880, and 34,111 less than in 1871. This apparent loss, however, is due to the fact that during the period 1880-90, 184 places, and during 1871-90, 563 places had outgrown the 2000 limit, and come to be classed as urban which had previously been reckoned as rural. Taking the country as a whole, therefore, it cannot be said that rural depopulation has yet begun in Germany; at the same time a number of districts, for example, in East Prussia, Franconia, and the Mecklenburgs have already shown a decline. In Spain several of the provinces have shown decreases at the latest enumerations, and those which have so decreased are remarkable for the absence of large towns. Rural depopulation has also made its appearance in parts of Austria, in Hungary, and in Italy. In Ireland the rural population at 1891 numbered 468,696 less than in 1881, and 750,396 less than in 1871, the rural area remaining practically unchanged at the three periods. Rural depopulation has indeed gone on unchecked in Ireland at the rate indicated for the last fifty years. In England and Wales, while the rural population at the last census had, as in all Germany, made a small increase, yet in the words of the census report, "in 271 out of the 632 registration districts into which England and Wales are divided for registration purposes, the returns showed an actual falling off in the number of inhabitants, and in 202 of these 271 districts there had also been a decline of population between 1871 and 1881." The districts which showed this falling off are conspicuous for the absence of large towns.

II. EXTENT AND DISTRIBUTION.

Increase of Population in Scotland.

According to the official returns the whole population of Scotland is increasing fast. It has, indeed, increased by 150 per cent since the beginning of the century, and by 53 per cent in the last fifty years. The following extract from the official table gives the actual increase of population in decennial periods since 1841 :—

TABLE 1.

Year.	Population.	Increase.	Increase per cent.
1841	2,620,184	...	...
1851	2,888,742	268,558	10·25
1861	3,062,294	173,552	6·00
1871	3,360,018	297,724	9·72
1881	3,735,573	375,555	11·18
1891	4,025,647	290,074	7·77

Decrease in certain Counties.

It will be observed from the last column that the rate of increase, although it has been somewhat unsteady, at no time fell so low that it threatened to become a minus quantity. The increase was continuous and well-sustained throughout. But what do we find when we compare in the same way the rates of increase in the several component parts of which the country is made up? We find that in many of those component parts the increase has neither been continuous nor well-sustained. On the contrary, no fewer than 20 of the 33 civil counties of which Scotland is made up (see Map 1) have exhibited an actual decrease of population at one or other of the last five enumerations, and some of them have exhibited it several times. The result of this is that we find fewer inhabitants in 1891

than in 1881 in sixteen counties
" 1871 " fifteen "
" 1861 " fifteen "
" 1851 " thirteen "
" 1841 " twelve "

The last-mentioned 12 counties have increased nothing in population in the last fifty years, and indeed they have made an absolute decrease.

But let us fix our attention for a moment rather on the 16 counties which had a smaller population in 1891 than in 1881. If to those 16 counties we add Roxburgh—one of the other 4 which had previously shown a decrease, but had itself made such a poor recovery afterwards that it failed to make good its previous losses—we have 17 counties which we can say have a smaller population at present than at *some* previous enumeration. These 17 counties, therefore, form one class by themselves. The remaining 3 counties, which had made a full recovery after their temporary decrease, together with the 13 counties which had never decreased at all, have a greater population at present than they ever had before. These 16 counties form a second class by themselves. We might call them the *increasing* counties, and the other 17 the *decreased* counties.

The decreased Counties poor in Towns.

The 17 decreased counties are the following: Shetland, Orkney, Caithness, Sutherland, Ross and Cromarty, Inverness, Nairn, Elgin, Perth, Kinross, Argyll, Haddington, Berwick, Roxburgh, Dumfries, Kirkcudbright, and Wigtown. When we look at the list we note several things. Firstly, these decreased counties arrange themselves roughly in two geographical groups, one at each end of the country. Secondly, with the single exception of Perth they contain none of the eight so-called "principal towns" of Scotland. Thirdly, these counties seem also to be poorer than the average in the number and in the population of their minor towns. But this last point is too generally stated, and we now proceed to find out more precisely in how far our statement is true.

To elucidate this point Table 2 has been prepared. In the one column stand the 16 increasing counties, and in the other the 17 decreased counties. For each county the proportion which the urban population bears to the whole is stated in terms per cent, and then the total averages have been struck for each column.

TABLE 2.

Increasing counties.	Urban population in terms °/. of the total.	Decreased counties.	Urban population in terms °/. of the total.
Banff	34·63	Shetland	13·69
Aberdeen	54·51	Orkney	12·89
Kincardine	20·87	Caithness	33·48
Forfar	82·19	Sutherland	0·00
Fife	52·58	Ross and Cromarty	7·31
Clackmannan	58·32	Inverness	23·34
Stirling	61·52	Nairn	40·06
Dumbarton	68·51	Elgin	35·33
Bute	59·49	Perth	40·94
Renfrew	87·29	Kinross	0·00
Ayr	60·45	Argyll	24·69
Lanark	86·65	Haddington	38·42
Linlithgow	51·51	Berwick	14·92
Edinburgh	84·95	Roxburgh	49·84
Peebles	48·88	Dumfries	33·52
Selkirk	86·88	Kirkcudbright	34·79
...	...	Wigtown	23·64
Average	62·45	Average	25·11
Percentage living in rural districts	37·55	Percentage living in rural districts	74·89

Those Facts suggestive.

It will be seen from a perusal of the table that our previous assumption of the comparative absence of town populations in those 17 decreased counties was well grounded on fact. And this is not so only in reference to the counties taken in the aggregate. Taken individually, not a single member of the decreased group had so great a proportion of urban population as the average of all the 16 counties which have increased. The converse is of course true in regard to the rural populations. The rural population was greater in each of the decreased counties than the average rural population of all the increasing counties, and indeed, if we except Banff and Kincardine from the latter group, than of each of them taken singly. (Roxburgh had a fractionally smaller proportion also than Peebles.) Thus the average rural population of the decreased counties amounted to 74·89 per cent of the total, while in the increasing counties it amounted to only 37·55 per cent. This fact is significant, and leads us irresistibly on to the conclusion that it must be something to do with their towns that has caused the increase of those 16 counties which have increased; and further, that if all the counties were considered apart from their town populations, a local depopulation much more serious and widespread than anything we have yet hinted at might possibly be discovered.

Methods of further Inquiry.

This latter point we will now proceed to investigate. For this purpose it will be necessary to take each county separately, and having found the total population of that county, to deduct the urban population therefrom, and so find the gross rural population. The census of Scotland groups the inhabitants of each civil county under the three heads of "town," "village," and "rural." The "towns" each contain as urban places from 2000 inhabitants upwards, the "villages" contain from 300 to 2000, and the "rural" population is the rest of the country. In this inquiry we have clubbed the "village" and "rural" populations together and called them rural, and taken the designation of "town" as we found it in the census, and for the reasons which have already been set forth in an earlier part of the discussion.[1] We began with the 1891 census and worked backward to 1841, six censuses thus giving a period for comparison of fifty years. In 1891 and 1881 there was no difficulty; the difficulty increased as we worked back, however, because it was necessary to remain by the same towns throughout. What were towns of 2000 + in 1891 had often been classed, and rightly classed, as villages in 1871 and the earlier censuses, as their populations at the time had been below the "town" limit. The population of such villages had therefore to be added to the total urban population of the period in order to make comparison possible with the year in which we started. The fact that the population of all such villages was given separately was very useful for our purpose. It was also necessary at times to make corrections in the given populations of large towns owing to subsequent extensions of boundaries, and a guide to this was obtainable by comparing the corrections on the previous census with the figures which had been given in that census itself. Thus the population of Glasgow, for example, was given in the 1881 census as having been greater in 1871 than was stated in the 1871 census itself, and such a correction also afforded some clue as to the correction to be made on the population of Glasgow for 1861. But it was impossible in such cases always to be quite certain, and for this reason the rural populations of Lanark, Renfrew, and Dumbarton for the period 1861 should be taken with an allowance for error of 1 per cent, and for the periods 1851 and 1841 of at least 2 per cent. Any other errors from this source are probably negligeable.

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[1] Most of the towns which had a population of 2000 and upwards in 1891 are inserted in Map 1. No smaller towns are included.

In the year 1851, the last occasion on which the Scottish census was mixed up with the English returns, the population of the villages necessary for calculation was not in every case given; but as this was much more fully done in the 1841 census, strangely enough, it was possible to strike a very good approximation for 1851 by comparing the returns for 1861 and 1841 together. This want of detail in the 1851 census is recognised in the first separate Scottish census of 1861, where it promises to give those villages of 300 inhabitants and upwards, "as was very partially done in the census abstracts of 1851."

Large Rural Decrease in many Counties.

Examination of Table 3 (p. 244) confirms the expectation expressed after a study of Table 2. When the towns are excluded from the reckoning, not only have *more* counties shown a decreased population at 1891 (28 instead of 17), but it could easily be shown that those which have decreased have decreased to a *greater extent.*

Of the 5 counties which had their greatest population during the period, at 1841, three—viz., Inverness, Perth, and Argyll—have decreased continuously at every enumeration. Bute narrowly escaped the same distinction. But the greater number of the counties reached their maximum at 1851 and 1861. No less than 20 counties had a larger rural population at one or other of those dates than they have ever had since. Only 1 county reached its turning-point in 1871—Banff—and only 2 in 1881; at those periods, however, most of those which had previously begun to decline continued in their course. The remaining 5 counties have at present larger rural populations than they ever had before, and with the exception of Dumbarton, have all shown a remarkable increase at the last census.

TABLE 3.—RURAL POPULATIONS OF SCOTTISH COUNTIES.

Name of county.	1841.	1851.	1861.	1871.	1881.	1891.	Loss.
Shetland . .	27,771	28,174	**28,552**	28,092	25,660	24,781	3,771
Orkney . .	27,461	28,004	**28,855**	27,838	28,097	26,527	2,328
Caithness . .	28,311	29,079	**30,180**	28,225	26,757	24,729	5,451
Sutherland . .	24,872	**25,793**	25,246	24,317	23,370	21,896	3,897
Ross & Cromarty	75,592	**78,326**	76,699	76,295	73,922	72,124	6,202
Inverness . .	**88,299**	86,031	76,254	73,505	73,069	68,462	19,837
Nairn . . .	6,545	**6,979**	6,622	6,474	6,290	6,005	974
Elgin . . .	25,732	27,614	**29,359**	29,104	28,728	28,102	1,257
Banff . . .	36,539	38,922	42,357	**43,279**	42,226	41,960	1,319
Aberdeen . .	115,115	121,360	128,236	133,601	**134,198**	127,984	6,214
Kincardine . .	29,863	30,958	**30,984**	30,548	29,299	28,206	2,778
Forfar . . .	56,138	**55,831**	55,116	51,382	51,568	49,474	6,357
Perth . . .	**102,209**	96,395	89,383	82,222	77,412	74,525	27,684
Fife . . .	92,354	**94,871**?	89,734	86,717	85,958	88,838	6,033
Kinross . .	8,763	**8,924**	7,977	7,198	6,697	6,280	2,644
Clackmannan .	11,380	**13,058**	10,145	10,640	11,847	11,850	1,208
Stirling . .	47,275	46,521	43,318	41,565	44,207	**48,332**	..
Dumbarton . .	21,265	19,503	20,519	23,186	29,374	**29,757**	..
Argyll . . .	**86,825**	78,447	68,684	62,809	60,037	56,483	30,342
Bute . . .	**9,951**	9,504	9,104	9,177	9,328	9,296	655
Renfrew . .	36,452	33,692	**37,420**	35,529	37,136	36,973	447
Ayr . . .	80,455	85,806	87,061	86,547	**93,110**	89,495	3,615
Lanark . .	115,607	104,038	101,131	113,712	129,170	**139,692**	..
Linlithgow . .	17,073	16,515	19,979	20,712	20,718	**25,606**	..
Edinburgh . .	47,942	48,049	49,646	57,096	60,938	**65,282**	..
Haddington .	24,764	24,866	**25,208**	24,940	24,600	23,080	2,128
Berwick . .	31,446	**32,742**	32,336	31,544	30,078	27,570	5,172
Peebles . .	8,138	7,980	**8,233**	8,094	8,014	7,545	688
Selkirk . .	**4,215**	3,673	3,632	3,620	4,144	3,589	626
Roxburgh . .	31,702	31,942	**32,670**	30,166	29,155	26,956	5,714
Dumfries . .	52,932	**59,672**	56,258	53,443	51,746	49,342	10,330
Kirkcudbright .	32,185	**33,697**	32,317	29,564	28,238	26,071	7,626
Wigtown . .	32,145	**35,052**	33,245	30,380	29,551	27,537	7,515
Totals .	1,437,316	**1,442,018**	1,416,455	1,401,521	1,414,142	1,394,349	172,807

Note.—The figures of the year in which the highest population was reached are given in heavier type.

The column to the extreme right of the table shows the actual decrease of population which has taken place in each county, and the figures of this column, as well as the total rural population at each decennium, have been added together. From these totals it will be remarked that the actual decrease of rural population over all Scotland is not so great as the sum of the actual decreases of those counties which have decreased

—a fact to be explained by the circumstance that five of the counties did not decrease at all, but more especially by the circumstance that those counties which did begin to decrease did not all begin to decrease at the same time. Lastly, it has to be noticed that a diminution in the rural population of *all* Scotland has gone on continuously since it began in 1851, with the exception of a small increase, shared in by about one-third of the counties in 1881.

Summary of Results.

To show the extent to which rural depopulation has taken place in each county in a form more easily grasped, Table 4 (p. 246) has been prepared. Here the counties are arranged in the order in which they have suffered the greatest proportional loss since that loss began, without reference to time. This method is the more allowable, seeing that nearly all the counties which had once begun to decrease, decreased continuously at each enumeration thereafter. The ratios of decrease have been calculated in terms per cent of the maximum population recorded for each county before the decrease set in; in addition the period at which this turning-point had been reached, and the ratio of decrease divided by the number of decennia between the turning-point and 1891, are also stated in parallel columns.

It may be pointed out that the counties would stand in the same order if the ratio of the decrease to the ascertained population of each in 1891 had been used as the basis of classification, although the figures so obtained would obviously exaggerate the facts. As it is, the first column of figures shows the true percentage of decrease for each county between the beginning of the decrease and 1891; they indicate the real extent to which each county has suffered rural depopulation. The figures of the next column show that in a general way those counties which had decreased the most, had been decreasing for the longest time. But the figures of the last column show still more conclusively that those counties which had decreased the most, had also been decreasing at the greatest rate. It is not pretended that these last figures give the exact average of the percentage decreases of any given county for a given number of decades (with the exception of those of the two counties which began to decline at 1881), but they give very good approximations. Lastly, it is interesting to note that the counties whose rural population has decreased the most and the fastest are counties which, in addition to their rural population, have an urban population much below the average. This may be confirmed with the help of Table 2.

TABLE 4.

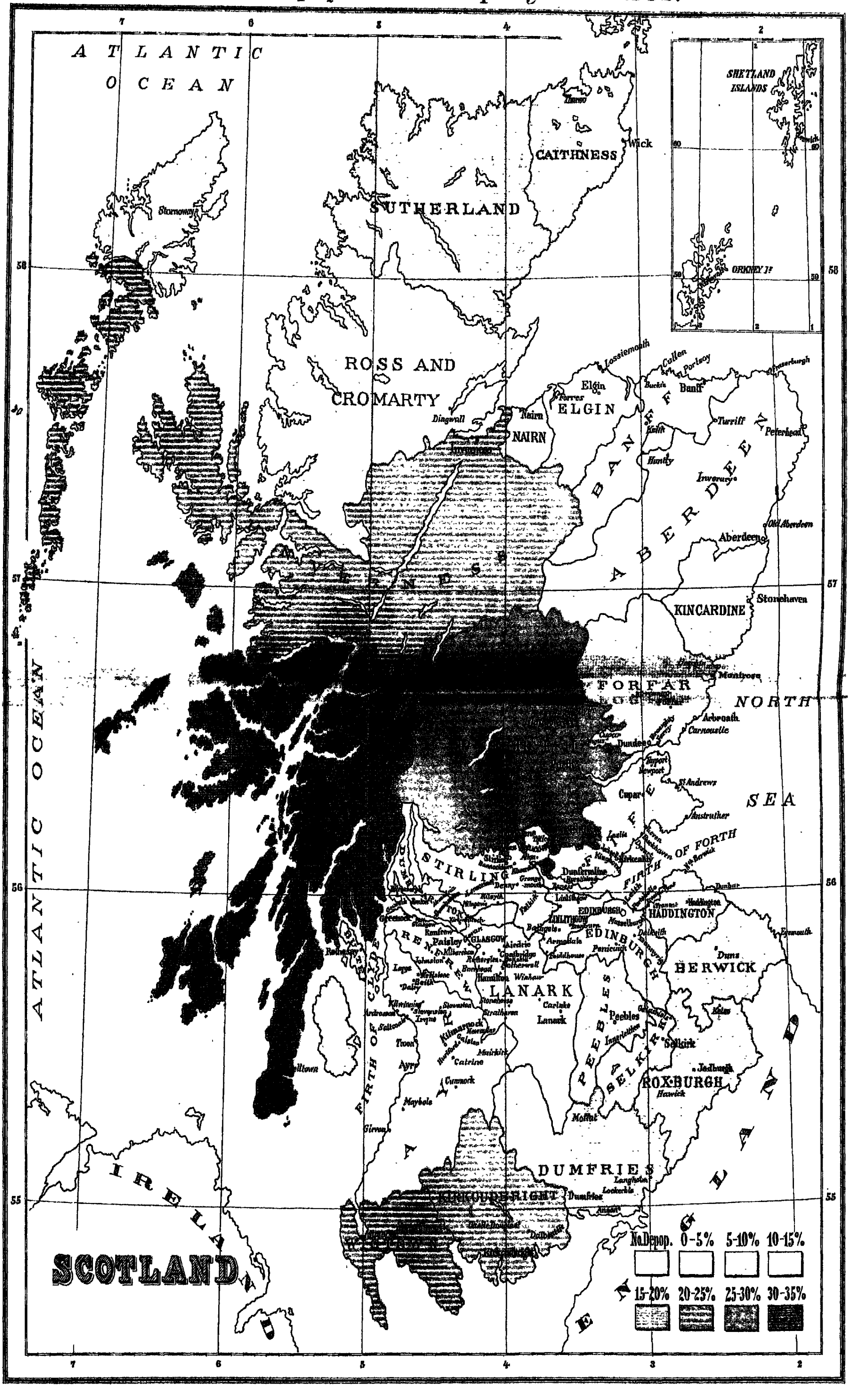
Name of county.	Ratio of decrease to maximum population.	Period of maximum population.	Rate of decennial decrease.
1. Argyll	34·96	1841	6·99
2. Kinross	29·63	1851	7·41
3. Perth	27·09	1841	5·42
4. Kirkcudbright	22·63	1851	5·66
5. Inverness	22·47	1841	4·49
6. Wigtown	21·44	1851	5·36
7. Caithness	18·06	1861	6·02
8. Roxburgh	17·49	1861	5·83
9. Dumfries	17·31	1851	4·33
10. Berwick	15·80	1851	3·95
11. Sutherland	15·11	1851	3·78
12. Selkirk	14·85	1841	2·97
13. Nairn	13·96	1851	3·49
14. Shetland	13·21	1861	4·40
15. Forfar	11·39	1851	2·85
16. Clackmannan	9·25	1851	2·31
17. Kincardine	8·97	1861	2·99
18. Haddington	8·42	1861	2·81
19. Peebles	8·35	1861	2·78
20. Orkney	8·07	1861	2·69
21. Ross and Cromarty	7·92	1851	1·98
22. Bute	6·58	1841	1·32
23. Fife	6·36	1851	1·59
24. Aberdeen	4·63	1881	4·63
25. Elgin	4·28	1861	1·43
26. Ayr	3·88	1881	3·88
27. Banff	3.05	1871	1·53
28. Renfrew	1·12	1861	0·40
29. Dumbarton	...	1891	...
30. Edinburgh	...	1891	...
31. Lanark	...	1891	...
32. Stirling	...	1891	...
33. Linlithgow	...	1891	...

In Map 1, prepared from Table 4, the extent and distribution of rural depopulation in Scotland are graphically set forth. The counties are classed and graded in eight different shades of red according to the degree in which they have suffered. It will be observed that groups of adjacent counties have generally been affected in the same way.

III. NATURE OF THE DEPOPULATION.

Having determined the *extent* and *distribution* of the rural depopulation, our next duty is to inquire somewhat into the *nature* of the phenomenon. Here several important questions arise. Was it the immediate result of an increase of migration or of a decrease in the birth-rate? In people of what age

Map. 1. Rural Depopulation Map. By Counties.



did it first show itself? Did it affect both sexes to the same extent? In investigating those points we shall confine ourselves to the case of two typical counties—viz., Kinross and Sutherland—two counties which have shown advancing depopulation since 1851 in the most marked manner, and the only two counties, indeed, which are available for our purpose, since, containing no towns at all, the facts given in the census concerning them refer to rural districts only.

Depopulation and Migration.

Did depopulation follow upon *migration* of the people to other parts? In the census schedules the dwellers in each county are asked to state which county they were born in, and the information so obtained is used, not only to find how many of the people are natives of the counties where they dwell, but the facts are looked at from the other side to get information as to the number of natives of each county to be found living in all parts of Scotland. We can thus deduce the following information in regard to Kinross and Sutherland for the periods 1851 and 1891:—

TABLE 5.

Year.	Population.	Natives living in Scotland.	Natives living outside county.	Strangers living in county.	Net loss by migration.
Kinross—					
1851 . . .	8,924	9,641	3605	2888	717
1891 . . .	6,280	8,840	5645	3085	2560
Sutherland—					
1851 . . .	25,793	27,941	6001	3853	2148
1891 . . .	21,896	25,791	7338	3443	3895

The figures show that while the number of natives living outside Kinross and Sutherland had increased by 2040 and 1337 respectively, the number of strangers who had come to settle only increased by 197 in the case of Kinross, while in Sutherland it had fallen off to the extent of 410 persons. In other words, and as shown in the last column of the table, both counties were on the balance sending out more persons to other parts of the country than they had been doing when their population was considerably higher. These facts plainly argue much more for the migration than the decrease-of-births theory of depopulation. Indeed the figures indicate that with the commencement of depopulation there had probably never been any decrease in the birth-surplus at all—that is, of course, in so far as the birth-rate itself is not liable to be affected by migration carrying off those of middle age and leaving those at the extremes of age. Unfortunately we cannot adduce proof of this, because the Registration Act only came into operation some years after depopulation had begun: in any case, however, owing to the disturbing influences of extensive migration upon the birth-rate directly, the question is perhaps one which can have more light thrown upon it by considering how the different age-classes participated in the change.

That depopulation was due to excessive migration, however, not in Kinross and Sutherland only, but in all rural districts alike, is indicated in the Census Report of 1871. Referring to the five groups of districts—viz., "principal towns," "large towns," "small towns," "mainland-rural," and "insular-rural"—into which the country is divided for registration purposes, the Report observed: "Had the five groups of districts increased solely by excess of births over deaths all would have increased their populations between 1861 and 1871; whereas only the three town groups of districts increased in population, while the whole mainland-rural and insular-rural greatly decreased in population." A part of the population "had gone to seek a livelihood elsewhere." And what could be said for 1861-71, might with equal truth be said for 1881-91, for while the two groups of rural districts had again decreased, there was a natural increase by excess of births over deaths recorded for them during the period amounting to no less than 142,234 souls. Again, a large number of persons must have gone to seek a livelihood elsewhere.

How it Affected the Age-classes.

How were the *age-classes* affected? In Table 6 the populations are arranged according to ages at three census periods, starting from the time that depopulation set in.

TABLE 6.

Kinross.				Increase or decrease per cent in 40 years.	Sutherland.				Increase or decrease per cent in 40 years.
Ages.	1851.	1871.	1891.		Ages.	1851.	1871.	1891.	
0–5	1112	883	702	−36·9	0–5	2,827	2,388	2,172	−23·2
5–15	2054	1668	1310	−36·2	5–15	5,503	5,134	4,600	−16·4
15–25	1578	1172	1109	−29·7	15–25	5,118	4,333	3,360	−34·3
25–35	1128	794	867	−23·1	25–35	3,523	3,008	2,713	−23·0
35–45	930	771	584	−37·2	35–45	2,806	2,736	2,369	−15·6
45–55	924	684	582	−37·0	45–55	2,390	2,383	2,270	− 5·0
55–65	653	584	521	−20·2	55–65	1,871	2,005	2,043	+ 9·2
65–75	358	450	407	+13·7	65–75	1,059	1,453	1,419	+34·0
75+	187	192	193	+ 5·9	75+	696	877	950	+36·5
Totals	8924	7198	6280	−29·6	Totals	25,793	24,317	21,896	−15·1

The increase or decrease of each of the age-classes over the whole forty years has also been stated in terms per cent. In Sutherland there had been a decrease in all the ages under 55 during that period, and in Kinross in all ages under 65, while above those ages there was an increase in both counties. As these changes are of rather an important nature, it will be well to examine the matter somewhat more closely.

Let us first look at Sutherland. In the first twenty years, 1851-71, the greatest falling off took place in those under 5 years and between 15-25—amounting to 18·4 and 18·1 per cent respectively. The decline among those aged 5-15 was much less than that, amounting only to 7·1 per cent—a fact probably due to the natural difficulty of married couples hampered with young families moving to other parts. The decrease of those under 5—*i.e.*, of those who were born fifteen years after depopulation had set in—may fairly be connected with the decrease of persons aged 25-35, a decrease amounting to 17·1 per cent. Persons aged 35-45 suffered a very small decline, and this may be supposed to result from the fact that in the first ten years of the period depopulation in the county was much less marked than in the second ten years, during which those over 40 especially would not readily set out to seek "fresh fields and pastures new." This applies even in a stronger degree to the 45-55 age-class. In all ages above 55 a large increase is recorded—the product of an increasing population of half a century before.

At the end of the second twenty years, in 1891, the decrease which had been prominent twenty years before in all ages under 35, was well marked in all ages under 55, while in all ages above that there was a notable increase with the exception of a trifling decline in the 65-75 class.

In Kinross-shire during the first twenty years there is a fall off in all ages up to 65; above that there is an increase. The greatest loss is sustained by the 25-35 age-class, which lost no less than 44 per cent; next comes the 15-25 age-class, which fell off 34 per cent—the decrease in both cases speaking for a large amount of migration. The 5-15 age-class, as in Sutherland, but less conspicuously so, fell off less than the age-classes on either side of it. Perhaps the most outstanding difference in comparing the two counties in the first twenty years of their decline, is the greater degree in which the older age-classes in Kinross-shire were affected. While during the first twenty years in Sutherland the 35-45 age-class suffered very little, and the 45-55 class remained practically stationary, in Kinross the former lost nearly 21 per cent and the latter no less than 35 per cent. Even the 55-65 age-class fell off 12 per cent. These facts seemed so unaccountable that it was thought desirable to turn back to the 1841 census to see if a partial decline calculated to affect those age-classes in the future had not already been apparent at 1851, while as yet a general decline had not set in. And this was found to have been the case. At 1851 the 25-35 class of that period had already fallen off some 6·4 per cent, and this fall had doubtless communicated itself to the 45-55 age-class of 1871. But a still greater fall of 10 per cent had also taken place in the 35-45 age-class of 1851, and when we again mention that the 55-65 class of 1871 had a decline of 12 per cent, it will be seen that it had lost very little more. And thus the greatest apparent anomaly in comparing the behaviour of the different age-classes in Sutherland and Kinross is accounted for.

During the second twenty years in Kinross-shire, 1871-91, depopulation showed itself still more among the oldest age-classes of all, thus continuing a decline which it had begun among a young class in 1851, and continued to a middle-age class in 1871. In 1891 the two youngest classes showed a decline in sympathy with the large general decrease in all ages from 5 to 45 twenty years before. The 15-25 and the 25-35 age-classes, however, show their independence by not sharing in the general decline in anything like the same proportion, and the figures in respect to those age-classes hold out a better hope for the little county in the near future.

To show in a more graphic form how the different age-classes were affected differently, Table 7 has been prepared.

TABLE 7.

KINROSS.				SUTHERLAND.			
Ages.	1851.	1871.	1891.	Ages.	1851.	1871.	1891.
0–5	124·6	122·7	111·8	0–5	109·6	98·2	99·2
5–15	230·2	231·7	208·6	5–15	213·4	211·1	210·1
15–25	176·8	162·9	176·6	15–25	198·4	178·2	153·4
25–35	126·4	110·3	138·1	25–35	136·6	123·7	123·9
35–45	104·2	107·1	92·9	35–45	108·8	112·5	108·2
45–55	103·6	95·0	92·7	45–55	92·7	98·0	103·7
55–65	73·2	81·1	83·0	55–65	72·5	82·5	93·3
15–65	*584·2*	*556·4*	*583·3*	*15–65*	*609·0*	*594·4*	*582·5*
65–75	40·1	62·5	64·8	65–75	41·1	59·7	64·8
75+	20·9	26·7	31·5	75+	26·9	36·1	43·4
Totals	1000·0	1000·0	1000·0	Totals	1000·0	1000·0	1000·0

The number of the different age-classes per 1000 of the population has been calculated for each period, while the numbers between the ages of 15 and 65 have also been given as a whole, to show the varying ratio of what we might call "potential producers" to the total population. There has been in Sutherland a continuous proportional decrease in the number of such producers during the whole forty years, while in Kinross there has been an increase during the second twenty years as a result of the improvement, which we remarked in the 15-25 and 25-35 age-classes when discussing the absolute numbers.

From the foregoing remarks it will be seen that for a beginning, depopulation first attacks the ages 15-35; that the ages under 5 soon show decrease in sympathy; that the 5-15 ages do so more slowly; and that it spreads itself over all the ages above 45, like the growing old of a man.

How it affected the Sex-classes.

Were both *sexes* equally affected? When a decrease of population in any county has set in, it nearly always shows itself first among the males. Thus in regard to the 20 whole counties which had shown a decrease at one time or another during the period of our inquiry, in 17 cases the males were either affected at an earlier census, or they were affected at the same census but in a greater degree. Only in 3 cases were the first symptoms most marked among the females — viz., in Caithness, Inverness, and Haddington. To trace for two counties the effect which continued depopulation had upon the relative proportions of the two sexes, reference may be made to Table 8.

TABLE 8.

Proportion of females to every 1000 males in—

	(*a*) Kinross.	(*b*) Sutherland.
1841	1089	1177
1851	1073	1164
1861	1106	1185
1871	1123	1131
1881	1152	1083
1891	1118	1106

The depopulation beginning after 1851 in both cases, the increased proportion of females at 1861 may be noted as in accordance with what has just been said about depopulation first affecting the males. In the case of Kinross it continued to affect the males in a higher degree for the next twenty years; in Sutherland, on the contrary, where the original proportion of females was abnormally high,[1] the secondary effects seem to have been more felt by the females. Why this differrence should exist it would be difficult to say. Perhaps the suggestion might be hazarded that it is due to the lower standard of comfort which undoubtedly prevailed in the Highland county at the time depopulation began to show itself, and to the fact that a considerable number of females continued to find employment in Kinross in the cloth-mills.

Effect upon the Conjugal Condition.

Let us next glance shortly at the effect upon the *conjugal condition* of the people. In Table 9 the number of single, married, and widowed persons, and the proportion which each formed of the total number of persons over 15 years of age, is stated for Kinross and Sutherland for three periods. The facts are given for the two sexes separately.

In Sutherland there is a decrease in the absolute number of married persons over the whole period. There is also a considerable decrease in the proportion of adult persons who were married to be noted for 1851-71; it will be seen, however, that this was much more due to a relative increase among the widowed than among the single. During 1871-91 the proportion of adult males who were married remained practically stationary, while in the circumstances the proportion of married females rose owing to the decreasing ratio of females to males in the county.

In Kinross-shire there is also a continual decrease in the actual number of married persons. Relatively, the number of persons who were married increased during the first twenty years, but fell off again in the second, although in the case of the males not by so much as the previous gain. The proportion of widowed remained about stationary throughout.

Taking the facts as a whole, it can scarcely be said that advancing depopulation has been marked by striking changes in

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[1] The ratio of females to males for the whole of Great Britain and Ireland is only 1060. In view of the excessive proportion of females in Sutherland, it is interesting to observe how it has been contributed to by the different age-classes. The following table gives the facts for the period at which the phenomenon was most marked—viz., 1861 :—

Age.	Proportion of females to every 1000 males at each age.
0– 5	984
5–15	932
15–25	1209
25–35	1383
35–45	1414
45–55	1253
55–65	1310
65–75	1486
75+	1384
All ages	1185

the conjugal condition of the people. In Kinross, where the proportion of married males was already comparatively high, it further increased, while in Sutherland the converse was the case. There is reason to suggest, however, that, owing to the manner in which it takes place, the general effect of depopulation is rather to raise the proportion of married persons.

TABLE 9.

	1851.		1871.		1891.	
	Male.	Female.	Male.	Female.	Male.	Female.
	KINROSS.					
Number of persons over 15 (adults)	2672	3086	2091	2557	1927	2341
Number of single	1184	1395	853	1137	831	1091
„ married	1310	1317	1101	1111	970	965
„ widowed	178	374	137	309	126	285
Of 1000 adults there were—						
Single . .	443·1	452·1	407·9	444·6	431·2	466·0
Married . .	490·3	426·7	526·6	434·5	503·4	412·2
Widowed . .	66·6	121·2	65·5	120·9	65·4	121·8
	SUTHERLAND.					
Number of persons over 15 (adults)	7730	9733	7530	9247	7031	8093
Number of single	3943	5198	3912	4956	3638	4120
„ married	3438	3466	3188	3163	2973	2959
„ widowed	349	1069	430	1128	420	1014
Of 1000 adults there were—						
Single . .	510·1	534·1	519·5	535·9	517·4	509·0
Married . .	444·8	356·1	423·3	342·0	422·8	365·6
Widowed . .	45·1	109·8	57·2	122·1	59·8	125·4

Effect upon the Occupation Classes.

Having now determined for two typical Scottish counties how advancing depopulation affects what we may call the natural classes, we will next inquire shortly into its effect upon the *occupation* classes. As it is possible to do this for a certain class of occupations only when the whole country is kept in view, we shall investigate the question in the first place in the case of one rural county only—Kinross. This county, it is true, is smaller than we could have wished, but the only other county available—Sutherland—is too exceptional in some respects, and it would take up too much time for us to examine each separately. Kinross lies well towards the centre of Scotland, and the several ordinary occupations of the Scot are all well and proportionately represented in it.

Before going on, however, it is necessary to give a word of explanation and of caution in regard to the figures now about to be used. The Census Commissioners, finding great difficulty in properly arranging so many different yet often closely allied occupations, have introduced important changes in their classification at every census up till 1891. We have endeavoured to obviate error from this source, however, by ignoring classes, orders, and sub-orders altogether, thus confining our comparisons wholly to special occupations. But even with such special occupational headings close scrutiny was necessary, as they are liable to undergo slight changes in their comprehensiveness either in the offices of the census or in the country. Another possible source of error lies in the well-known inability of uneducated persons always to define their callings properly when filling up their schedules, but by grouping closely allied occupations in the same table the totals of these at least may be supposed to give very approximate results. It has also to be mentioned that at 1871 and the previous periods the "retired" were included under the headings of their old occupations, while at 1881 and 1891, with the exception of those belonging to the professional class, they were not. As the Census Commissioners value the average gain to the censuses where this inclusion was made at 2 per cent, we have corrected the figures for the dates concerned in accordance with their estimate. Lastly, it must be pointed out that the occupation tables of the census refer to the Registration county which, while it is also entirely rural, yet differs somewhat from the Civil county, the population of the former at 1891 being 6725 and that of the latter 6280. But the registration county has decreased throughout in a manner quite similar to the civil county, so that provided we do not make long-drawn comparisons with what has gone before, the necessary change from the one to the other at this point will not affect us. It is true that the occupation tables for 1891 profess to deal with the civil counties, but after careful examination in the case of Kinross-shire we find that the facts are really given for the registration county in all its component parts and with no additions, with the exception that some 52 persons of all ages are not accounted for in the two agricultural parishes of Fossoway and Tullibole and Portmoak. The occupation tables deal in all with 6673 persons in Kinross-shire in 1891; the numbers accounted for in the occupation tables of 1881, 1871, and 1861 correspond with the populations of the registration counties at those dates as they profess to do. It is to be regretted that the facts for 1851 refer to the civil county, because they are consequently not strictly comparable with those published at later dates, and have had to be omitted. As, however, we shall after leaving the county discuss the important class connected with agriculture for the whole of Scotland, we may again resume consideration of the 1851 figures in regard to it.

With these somewhat lengthy but necessary explanations let us proceed.

1. *Professional Class.*—Table 10 gives the numbers of the professional class in Kinross-shire at four different periods.

TABLE 10.

	1861.	1871.	1881.	1891.
Clerical	18	18	17	17
Legal	11	16	12	15
Medical	7	5	7	5
Teachers { Male	25	27	12	16
Teachers { Female	8	9	20	18
Total teachers	33	36	32	34

The clergymen being a fixed institution in the parishes have neither decreased nor diminished. The number of teachers, as with the clergy, is not influenced in the rural districts by the demand, every country parish or district having its elementary school and teaching staff. It is noticeable that the female teachers have increased at the expense of the male. This is a national phenomenon, and is favoured by the popularly elected school boards on the ground of expense. Otherwise the figures relating to the professional class are too small for comparison.

2. *Persons connected with Transport.*—In 1851 there were no railways in Kinross; in 1861 there were 38 persons connected with the railway; in 1891 there were 113 persons in the railway employ. The probable reason why the platelayers are given less in 1881 is that a squad—*i.e.*, 12 or 14 labourers with a "gaffer"—would have been temporarily called away from home to co-operate in executing some important repairs. The carters and vanmen, along with the saddlers and harness-makers, have plainly suffered with the growth of railway enterprise. The tolls were abolished over Scotland at various times during the

last thirty years, when the road boards, now merged in the county councils, were empowered to assess in local rates for the upkeep of the turnpikes. The totals show a large increase in the number of those engaged in transport, and a still larger in those engaged in the most efficient form of it, and as a ready means of transport is immediately connected with the economic life of a community, we will now proceed to inquire how the increase affected the following occupations.

TABLE 11.

	1861.	1871.	1881.	1891.
Railway service	19	25	51	57
Railway navvy, platelayer, &c.	19	34	14	56
Total railway employees	*38*	*59*	*65*	*113*
Carters, carriers, vanmen	36	24	24	26
Farriers	2	1	1	1
Road-labourers	19	10	18	8
Coach- and carriage-makers	0	2	3	3
Saddlers, harness- and whip-makers	8	6	5	4
Toll-collectors	8	5	0	0
Totals	111	107	116	155

3. *Tradesmen.*—Let us confine our attention here to such "trades" as are sufficiently well defined from other trades to secure accuracy of description.

TABLE 12.

		1861.	1871.	1881.	1891.
Carpenters and joiners		74	74	66	64
Black- and white-smiths		61	51	48	38
Shoemakers		95	80	50	29
Tailors and milliners	Male	46	51	62	59
	Female	149	126	106	110
Slaters		13	12	16	12

Every class of tradesmen fell off absolutely with the possible exception of the slaters. The smiths and the shoemakers fell off more than proportionately to the general decrease of population, presumably because the articles they produced were easily capable of transport. Then in the case of shoemakers especially, machine-made goods were rapidly superseding the hand-made article. The carpenters, but more particularly the slaters, did not fall off proportionately to the general decline of population, because the work of the slater is entirely incapable of transport, and because the work of the carpenter is in large part so. The total tailors and milliners had decreased, but not proportionately to the general decline of population, partly because it is the almost general custom in such country districts to get clothes made to measure; doubtless, also, because the standard of fashion had risen.

4. Those *engaged in Manufactures*.—A decline in the total numbers engaged in textile industries is evident at first sight. Closer examination of the figures shows that this decline was first apparent in those employed about cotton. From giving work to 410 operatives in 1861, the cotton-weaving industry in ten years had practically died out. The large increase in woollen manufacturers at 1881 may reasonably be viewed in connection with the sudden collapse of cotton-spinning. But since 1871 the woollen industry has itself gradually declined, and although we cannot measure it fully on account of a large number being returned as "undefined" at that period, we see that the decline has at least amounted to 31 per cent. With a large decrease in all those not returned as flax-spinners at 1881, the flax-spinners themselves increased, although, like the woollen manufacturers ten years before, they immediately began to decline again. All the signs indicate that the manufacturing industry is dying hard in Kinross: it is the victim of the inexorable law of increasing return acting from the large centres.

TABLE 13.

		1861.	1871.	1881.	1891.
Woollen manufacturers	Male	167	254	207	151
	Female	89	153	163	126
Cotton manufacturers	Male	214	23	15	6
	Female	196	27	24	8
Flax and linen	Male	37	20	21	17
	Female	70	61	125	123
Weavers, &c. (undefined)	Male	27	33	24	12
	Female	0	94	56	12
Totals		800	665	635	455

5. Those engaged in the distribution of goods—*i.e.*, *Shopkeepers* (Table 14, p. 258).

The increase in the number of butchers implies a greater consumption of butcher-meat. It is indeed a matter of common knowledge that more butcher-meat is consumed in the country districts now than thirty or forty years ago, when the labourer had meat to dinner only on the Sundays. Of course, the figures do not adequately account for meat killed at home, which is an important point in considering rural consumption. The provision-curers may probably be classed, and indeed appear to have been once classed, with the butchers, as the curing of bacon and hams is evidently implied. For the fishmonger's existence in Kinross a good and speedy mode of transit such as the railway was a *sine qua non.* The bakers have increased, a fact to be viewed in connection with the growing disuse of oatmeal (see below regarding corn-millers) and of home-made bread. The totals of the shopkeeper class describe a wavering but decidedly ascending line, and in all bespeak an increasing supply of money in the hands of the population.

TABLE 14.

	1861.	1871.	1881.	1891.
Butchers	7	8	10	15
Provision-curers	2	2	0	5
Together	*9*	*10*	*10*	*20*
Fishmongers and poulterers	0	2	3	3
Bakers	24	21	39	36
Grocers, tea-merchants, &c.	48	63	64	42
Totals	81	96	116	101

6. Those *engaged in personal service,* excluding coachmen, grooms, gardeners, and hotel servants.

TABLE 15.

		1861.	1871.	1881.	1891.
Domestic indoor servant	Male	24	10	8	25
	Female	357	296	306	215
Lodge gatekeeper		3	3	5	9
Charwoman		0	1	3	18
Totals		384	310	322	367

At the intermediate dates the male domestic servants would seem to have largely fallen off, implying that several wealthy individuals had left the district. The figures regarding the charwomen, on the other hand, suggest that the poorer families had been taking more advantage of hired labour. For the other details, and neglecting the somewhat surprising figures of 1861 (the Registrar for that year, judging from his Report, seems to have cherished exceptional views regarding the importance of the domestic services of the members of a family), the figures indicate a very tangible increase of comfort in this diminished rural community.

7. Persons *connected with Agriculture.*—The farmers have suffered diminution, although the *class* of farmer, sooner than

the *number* of farmers, is influenced by a change of economic conditions. The number of farms is generally not so easily changed. The farmer's sons, &c., includes those over 15 years of age living in the farmer's house, and presumably engaged in agriculture. The male agricultural labourers have suffered a very large decrease, but the female labourers have suffered proportionately even more. The bailiffs, labourers, and shepherds have been grouped together as agricultural wage-earners, and in this light there is also a large decrease. The corn-millers have suffered severely, and the figures relating to them are evidence of the change from the old-fashioned Scotch oatmeal to the wheaten flour, which is bought already ground. Formerly every parish had its meal-mill nearly as regularly as its "kirk steeple." The totals show a gradual decline towards 1891 with the exception of those for 1861. We have already referred, however, to the somewhat vague distinction between certain classes of occupation, such as "agricultural labourer" and "general labourer" (undefined), and on inquiry we find that the number of labourers returned in Kinross-shire at 1861 as "undefined" was exceptionally great. Probably this accounts for the smaller number of agricultural labourers at that period.

TABLE 16.

		1861.	1871.	1881.	1891.
Farmers and graziers		211	172	173	185
Farmer's son, grandson, brother, nephew		43	49	50	59
Farm bailiff		3	12	8	13
Agricultural labourer and farm-servant	Male	646	660	472	371
	Female	150	171	90	52
Shepherd		*14	*34	46	41
Agricultural wage-earners		*813*	*877*	*616*	*477*
Corn-millers		18	18	6	6
Totals		1085	1116	845	727

* Refers to "outdoor" shepherds only.

But we do not require to confine our brief remarks on the agricultural class within the small limits of Kinross-shire. The figures given in the census in regard to it for the whole country refer to an industry which is conducted in rural districts only. Table 17 gives the numbers employed in the different branches of agriculture for all Scotland as has just been done for Kinross, with the figures for 1851 in addition.

The corn-millers have again been included, even although a part of them are doubtless dwellers in the city. A small part of the farmers, labourers, &c., also dwell inside what we called "towns," but as the number is small we may overlook the fact here. And however great it might have been, it certainly would not in this class of occupation have increased the *comparative* significance of the figures in reference to that part of the "rural" population whose occupation is connected with the cultivation of the soil.

TABLE 17.

	1851.	1861.	1871.	1881.	1891.
Farmers and graziers	55,351	62,785	56,335	55,183	54,332
Farmer's son, grandson, &c. . . .	23,685	17,251	19,188	16,191	17,081
Farm bailiff	2,175	3,091	2,857	3,518	3,248
Agricultural labourer and farm-servant Male . .	137,440	127,960	108,818	91,801	85,366
Agricultural labourer and farm-servant Female .	53,536	40,150	41,935	44,175	22,055
Shepherd	*6423	*7116	*8185	10,274	10,104
Agricultural wage-earners . . .	*199,574*	*178,317*	*161,795*	*149,765*	*120,773*
Corn-millers	4,407	4,053	3,555	3,420	3,229
Totals . . .	283,017	262,406	240,873	224,550	195,415

* Refers to "outdoor" shepherds only.

To show the changes which have taken place in the various occupation groups in an easier form, the respective increases or decreases of each for each decennial period and for the whole period have been calculated in terms per cent.

TABLE 18.

	1851-61.	1861-71.	1871-81.	1881-91.	1851-91.
Farmers and graziers .	+13·43*	−10·27	− 2·04	− 1·54	− 1·84*
Farmer's son, grandson, &c.	−27·16	+11·23	−15·62	+ 5·50	−27·88
Farm bailiff . . .	+42·11	− 7·57	+23·14	− 7·67	+61·75
Agricultural labourer and farm-servant Male	− 6·89	−14·95	−15·64	− 7·01	−33·21
Agricultural labourer and farm-servant Female	−25·00	+ 4·44	+ 5·33	−50·07	−58·80
Shepherd . . .	+10·79	+15·02	...	− 1·65	...
Agricultural wage-earners	*−10·65*	*− 9·26*	*− 7·44*	*−19·36*	*−39·48*
Corn-millers . . .	− 8·03	−12·29	− 3·80	− 5·58	−26·73
Totals . .	− 7·28	− 8·20	− 6·77	−12·98	−30·95

+ = Percentage increase. − = Percentage decrease.
* Apparent increase 1851-61, see below.

The farmers and graziers show a continual falling-off since 1861, although, as was observed in the case of Kinross, they are liable to smaller proportional changes than the other members of the group, provided the farms are not very small. The figures in the table indicate a large increase of farmers during 1851-61. This apparent increase, however, seems to be accounted for by the fact that in the 1851 census a number of small farmers were classed as agricultural labourers on the ground that their holdings were too small to entitle the occupier to the designation of "farmer." To get some idea of how far this had taken place, recourse was had to a series of tables which have unfortunately been discontinued in the 1891 census. The occupiers of land were asked to state the acreage of their farms in their schedules, and as a sufficient number always complied with this request, it was possible for us, by reducing the published totals for each period to 1000, to draw up a table giving the relative number of farms of the different sizes at three periods.

TABLE 19.

Size of farms.	1851.	1871.	1881.
Under 10 acres	345	120	160
From 10- 50 "	297	299	288
" 50-100 "	149	192	174
" 100-200 "	125	195	188
" 200-300 "	39	76	71
" 300-400 "	17	38	39
" 400-500 "	9	18	18
" 500-600 "	5	13	13
Over 600 "	14	49	49
All sizes	1000	1000	1000

It would have been useful to have had more size-classes under 50 acres, but the sizes given are the only ones that coincided with the different grades of classification adopted in the different censuses. We see, then, that in 1851 there was a much larger proportion of the smaller farms, and consequently there must have been a much larger number of farms altogether than in 1871. Although the farms of 10-50 acres are slightly less relatively to the whole than in 1871, they evidently formed a greater number absolutely. There must, then, have been a much larger number of separate holdings altogether in 1851 than in 1871, and consequently a much larger number of farmers at the earlier period than are actually credited.

This reduction in the number of small farms seems chiefly to have taken place in Orkney, Shetland, Caithness, Sutherland, Ross and Cromarty, Inverness, and Argyll—counties which have long been recognised as the home of the "crofters." In those counties the number of holdings under 5 acres had been reduced sixfold in some cases, in others even more.

But the greatest actual falling off among the agricultural class has taken place among the "labourers"—a decrease amounting in 1891 to 33 per cent among the male and nearly 59 per cent among the female labourers. Whether this falling off was due to and commensurate with an actual decrease of tillage, to improvements in labour-saving machinery, or to unwillingness on the part of the labourers themselves to go on working under the old or under improved conditions, does not fall to be discussed at this point. But that it was of a very real nature can be well seen in examining the number of men labourers employed on a stated number of farms of from 300-400 acres in extent, situated in a purely agricultural county such as Haddington—perhaps the best and most intensively cultivated county in Great Britain. In 1851 there were in this county 39 farms of the size just indicated, and in 1881 there were 40, and the number of labourers employed at the two periods was as stated in Table 20.

TABLE 20.

1851.				1881.			
Farms.		Men.	Men.	Farms.		Men.	Men.
1	employed . .	3 =	3	3	employed . .	3 =	9
5	" . .	7 =	35	5	" . .	4 =	20
4	" . .	8 =	32	10	" . .	5 =	50
17	" . .	10 =	170	8	" . .	6 =	48
8	" . .	15 =	120	4	" . .	7 =	28
4	" . .	20 =	80	3	" . .	8 =	24
				3	" . .	9 =	27
				3	" . .	10 =	30
				1	" . .	15 =	15
39 farms employed (men)			440	40 farms employed (men)			251
Or,				Or,			
40 farms employed (men)			451	40 farms employed (men)			251

The best 300-400 acre tillage farms in Scotland were thus employing in 1881 on the average 5 men less each, or 1 man less for every 70 acres, than they were doing thirty years before. In view of this typical concrete case we can the better appreciate the enormous decrease in agricultural labourers all over Scotland.

But the decrease in agricultural labourers, large though it is, is not quite so large as the figures in Table 18 indicate; for we have already pointed out, when talking of the "farmers," that in 1851 a number of what were really small farmers had been tabulated as agricultural labourers. And apart from this, as an indication of how far rural depopulation affected the agricultural labouring class, the figures in the table are not *quite* so significant as they would seem, because in 1851 there was a slightly larger number of children under 15 returned as "agricultural labourers," and this excess may in 1891 be supposed to have been attending school. The difference in this respect, however, is not so great as on second thoughts we might have imagined: what it really amounted to will be gathered from Table 21.

TABLE 21.

		Total agricultural labourers.	Number under 15 years.	Per cent of labourers under 15 years.
1851	Male	137,440	11,054	8·04
	Female	53,536	3,608	6·74
1891	Male	85,366	5,896	6·90
	Female	22,055	977	4·43

It will be seen that the indicated decrease of agricultural labourers is due only in a very small degreee to the withdrawal of children from field-work, and that this withdrawal was not very much more than proportional to the withdrawal of the adults themselves. Rural depopulation, then, has been accompanied by a large real decrease among the agricultural labourers.

The figures regarding the farm bailiffs, or "grieves" as they are called in Scotland, although they do not show unbroken progress, indicate a large increase in 1891 over those at the beginning of the period. An increase among bailiffs had also taken place in England, where many of the landlords have had farms thrown on their hands. In Scotland, as it is practically unknown for landlords to have land thrown idle on their hands in this way, the reasons for the increase—in so far as the figures do not simply reflect the passing whim of the better educated modern "bailiff" in filling up his return—must be sought for elsewhere. Very many of the smaller proprietors or "bonnet lairds" now have another business in addition to farming, and for such it is generally necessary to engage a better foreman, to relieve them of the details of farm management. Then the saving instinct—the love of thrift—is not so strong now among the farming class as it was fifty years ago, when rural life was much quieter than it is at the present time, so that probably a greater number of small proprietors and large tenants have been indulging in the luxury of a grieve than was formerly the case. There is a decrease of over 7 per cent in the bailiffs, however, during the last ten years, and if the reasons we have advanced for the general increase of bailiffs be the right ones, this decrease may well be connected with the advance of agricultural depression.

Looking next at the shepherds, the figures seem to indicate an extraordinary increase in their numbers. The figures at the first three dates refer to "outdoor" shepherds only—*i.e.*, shepherds not living in the farmer's house—and the increase for those periods is doubtless as the figures indicate. For 1881 and 1891, however, as we had previously suspected and subsequently ascertained at the Census Office, the figures include "indoor" shepherds as well, so that the returns for 1871 and 1881 are not comparable. There was a small decrease at 1891. Taking the whole facts into consideration, nevertheless, we may safely conclude that there has been a tangible increase of shepherds over the whole period, as there undoubtedly was up till 1871.

As the question of the "shepherds" is rather important as indicating changes in the rural economy of the country, it is necessary to give a word of explanation in regard to the duties of a shepherd in the Lowland counties. Except on very large farms, and at special times of the year, his flocks are generally not sufficient to occupy his full time. He is for so many hours of each day a shepherd, and for so many hours an agricultural labourer. Consequently an increase or a decrease in the number of sheep might take place over extensive areas without influencing in any way the number of shepherds: it would simply cause the shepherds to devote more time to their flocks.

As the "agricultural labourers," "bailiffs," and "shepherds" have probably suffered small mutual gains and losses in tabulation, and as they are closely related by occupational ties, we have also grouped them together as agricultural wage-earners. Agricultural wage-earners have decreased nearly 40 per cent in Scotland in the last forty years.

The corn-millers, as in Kinross-shire, have decreased throughout, the usual payment of a "stone" in the "load" (1 in 20) not being sufficient inducement for them to stay on, with the diminishing demand for their services.

The totals indicate an important decline (Tables 17 and 18) in the number of "persons connected with agriculture" at every period for which their numbers have been taken.

IV. Causes.

It has been necessary to devote more time than was originally intended to the investigation of the various natural and occupation classes, but it was an important part of the inquiry that we could not very well curtail. Besides its intrinsic interest it has thrown many side-lights upon the various *causes* of the phenomenon, and enables us now to weigh more accurately the relative importance of these than we could otherwise have done. We have seen that depopulation is due to migration, chiefly and in the first place of males between the ages of 15 and 35. We have seen from the increase in certain occupation classes that the standard of living had not fallen, so that this migration must have been, to a certain extent at least, of a voluntary nature. We have seen a very large decrease among those engaged in agriculture, so that any causes which would tend to depress that industry, or to render labour in it less necessary, ought to engage our attention. Finally, a large increase among those occupied in transport operations has already proclaimed itself as a direct cause of decrease among those employed in manufacturing easily transportable articles on a small scale.

In inquiring more particularly into the causes of rural depopulation in Scotland, we find that some localities have suffered owing to special and peculiar circumstances. Thus in 1851 one parish in Fifeshire decreased owing to the exhaustion of a large lime quarry; one district in Banffshire fell off from what appears to have been a local epidemic; while a part of Kincardineshire suffered owing to "want of employment at the granite quarries since the introduction of wood paving." It would be impossible to trace out all such local causes of rural depopulation; we must confine our attention to those which have been generally potent, or at least have been active over a large part of the country in common.

Corn Laws.

The repeal of the Corn Laws in 1846 helped to draw the people from the land. The results were important and well defined. It is scarcely necessary to point out how the increased importation of cheaper food which ensued stimulated those manufactures which had their place in the cities, thus holding out a greater attraction to those engaged in agriculture to go into other industries, at the same time that it weakened the inducements which had previously caused them to stay at home.

Improved Machinery.

The extending use of *improved machinery in agriculture* seems to have been a potent factor in inducing or permitting rural depopulation. An idea of this extension may be gathered from the fact that the number of "agricultural implement makers" in Scotland increased from 58 in 1861 to 222 in 1891. The reaping-machine, introduced into general practice about 1868, enabled the farmer to harvest his corn crop with half the number of "hands." The horse-rake gave him a like advantage in dealing with the hay crop. The grubber, the chain-harrow, the horse-hoe, and the steam threshing-machine are all comparatively new, and save a vast amount of manual labour. In addition there is hardly an implement previously existing that has not been improved in the way of saving labour. It is only necessary to mention the new "chilled" ploughs, zigzag harrows, balance iron rollers, revolving turnip-cutters, corn-dressing machinery, and all the modern dairy appliances. It can no longer rightly be said that the agricultural labourer on a large farm is unskilled. To be an efficient servant he must have what the farmers call a "guid heid" for machinery. He must be able to manage, and be handy at effecting temporary repairs upon, a large number of different kinds of implements.

The class of labourer which machinery has helped agriculture to dispense with is, as might have been expected, the most unskilled. We have seen that the female agricultural labourers suffered far more heavily than the men.

Improvements in machinery *in other industries* have also led to rural depopulation. The most important was that which led to the gradual suppression of the hand-loom by the power-loom about the year 1840. The effect perhaps was not so sudden as might have been expected. But no young men took up the trade, and the very last of the village weavers will soon have died out.

Means of Transport.

A great—we had almost said the greatest, but it is perhaps dangerous to estimate the comparative potency of co-operating causes—inducement to rural depopulation has been the extensive *increase of transport facilities.* It has been seen how the number of those engaged in transport increased in Kinross in forty years. In Scotland since 1851, with the exception of the main lines in the more southern portion of the country, the whole railway system is new. The railway engine-drivers and stokers have increased from 881 in 1851 to 6003 in 1891, while the efficiency of their locomotives has at least doubled. During those years also the tonnage of sailing and steam vessels belonging to the United Kingdom increased as follows:—

TABLE 22.

	1850. Tons.	1890. Tons.
Sailing vessels	3,396,359	2,907,405
Steam "	168,474	5,037,666
Totals . .	3,564,853	7,945,071

The increase of carrying power was more than the totals indicate, because more than the total increase was of steam-vessels. Other factors tending to increase the efficiency of the tonnage were the opening of the Suez Canal in 1869, and the general employment of steam-winches at the docks. So much has ocean-carrying power increased, that it now satisfies all but the very weakest demands. For example, in the case of grain, freights from New York have fallen from 6½d. in 1869 to 2¼d. per bushel; from Odessa from 1s. 3d. in 1872 to 3d. per bushel; and from Bombay from 1s. 7d. in 1873 to 5¾d. per bushel. Since 1851 the telegraph has gradually closed its meshes over the whole length and breadth of Scotland, and the habit of using it and the other available means of inland communication has greatly developed among the people. And what has been the result?

1. Every local manufacture has been tried upon its natural merits. As such local factories, however, labour under the well-known disadvantages of production upon a small scale they have had to give in; manufactures have become more and more centralised. We saw how the weaving industries of Kinross went to the wall accompanied by the local shoemakers and the blacksmiths. Evidences of the same kind of thing are common all over Scotland.

2. With the increase of sea traffic, there was naturally a large increase in the imports of agricultural produce. An idea of this increase will be gathered from the following table, giving the values of grain and animal products imported into the United Kingdom at four periods:—

TABLE 23.

	1867.	1871.	1881.	1891.
Corn, grain, and flour .	£41,388,349	£42,691,464	£60,856,778	£62,022,000
Animals, dead meat, dairy produce, &c. .	16,637,713	22,032,000	43,187,000	53,745,000
Totals . .	£58,006,062	64,732,464	104,043,768	115,767,000

It is often assumed that this increased importation of agricultural produce led the farmer thereupon to limit his tillage operations, and pay off some of his workers. This assumption is not borne out by the facts. In Table 24 (p. 268) is given the acreage under different kinds of crops in Scotland at four different periods. The figures are taken from the Agricultural Returns published annually since 1867.

Examination of the table at once shows us that there has been very little diminution of the cropped area at all, and that only towards the very end of our period. The cropping rotation has been gradually lengthened, it is true, by leaving the land rather longer down in grass; but the diminishing effect which this would otherwise have had upon the area of corn and green crops has been nullified by breaking in a considerable area of new land from moors and wastes. This can be more easily understood from Table 25, where the different items have been calculated on the basis that the returns for 1867 equal 100.

TABLE 24.

	1867.	1872.	1882.	1892.
Total area under crops, bare-fallow, and grass	4,379,000	4,537,000	4,784,000	4,896,928
Corn crops	1,364,000	1,435,000	1,425,000	1,297,231
Green	668,000	701,000	687,000	638,794
Bare-fallow	83,000	28,000	21,000	8,584
Rotation grass	1,211,000	1,320,000	1,467,000	1,614,070
Permanent pasture	1,053,000	1,053,000	1,184,000	1,338,249
Horses (farm only)	...	177,000	191,000	200,109
Cattle	979,000	1,121,000	1,081,000	1,221,726
Sheep	6,894,000	7,141,000	6,854,000	7,543,447

TABLE 25.

	1867.	1872.	1882.	1892.
Total area under crops, bare-fallow, and grass	100	103	109	112
Corn crops	100	105	104	95
Green crops	100	105	103	96
Bare-fallow	100	34	25	10
Rotation grass	100	109	121	133
Permanent pasture	100	100	112	127
Horses (farm only)	...	100	108	113
Cattle	100	114	110	125
Sheep	100	103	99	109

It seems, therefore, that what increased importations have done in Scotland was not, as is too readily supposed, to make the farmers cultivate less, but rather, as the price of grain fell, to cultivate as much as ever in order to get corn to feed more live stock with, instead of to sell direct to the corn-merchant, as had previously been the case. The inducement to do this was strong, because the best qualities of butcher-meat have fallen in price very little in recent years, and very much less than grain has. (Compare Tables 26 and 27.)

And that Scottish farmers actually took this course is seen from the increase in permanent and rotation pastures which we have already referred to, as well as from the increase of sheep and cattle.[1] In view of these facts it cannot be said that the increased imports of agricultural produce have stimulated rural depopulation in Scotland by throwing agricultural labourers out of employment. In the south of England it is probably different.

TABLE 26.

	Wheat per qr.		Barley per qr.		Oats per qr.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
1867	64	5	40	0	26	0
1872	57	0	37	5	23	2
1882	45	0	31	2	21	10
1892	30	3	26	2	19	10

TABLE 27.

	Beef per 8 lb.		Mutton per 8 lb.		Pork per 8 lb.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
1872	5	10	6	8	4	9
1882	6	0	7	2	5	0
1892	5	10	5	7	4	7

The above are *top prices* for each period.

The view that increased imports by depressing agriculture did not directly drive the Scottish labourers to leave the rural districts is further suggested by the fact that agricultural wages have steadily risen. The rise has been universal over the whole country, but we may be permitted to take the following counties as affording typical examples. The facts for 1892 are taken

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[1] It should be mentioned that, as a result of the more concentrated feeding which sheep and cattle receive under the newer system of Scottish agriculture which has just been described, the increased attention now devoted to those classes of stock is greater than the actual increase in their number indicates. Of course the extent of this increased attention is only partially brought out by the following table giving the ages of the two principal kinds of live-stock at different periods. The numbers have been calculated per 1000 of the totals.

	1871-75.	1892.
Cows and heifers in milk or in calf	348	364
Other cattle—2 years and above	238	226
" —under 2 years	414	410
Total cattle	1000	1000
Sheep—1 year old and above	661	647
" —under 1 year	339	353
Total sheep	1000	1000

We see, however, that in twenty years there had been a considerable increase in the proportion of milk cows—the class of cattle which require the most attention; while of all other cattle, those under 2 years had relatively increased to those above that age, showing that fat stock was being more rapidly turned over. The same remarks apply to the younger class of sheep, although the particular age-classes adopted in the returns are not calculated to bring out fully the actual change which has taken place.

from the Report of the recent Labour Commission, and those for 1867 from the Royal Commission of that date on "the Employment of Children, Young Persons, and Women in Agriculture." At those dates the average weekly wages of married ploughmen were as follows:—

TABLE 28.

	1867.		1892.	
	s.	d.	s.	d.
Aberdeen	12	8	17	3
Fife	14	11	19	3
Lothians (Linlithgow, Edinburgh, and Haddington)	15	4	19	1
Berwick	15	8	18	6
Ayrshire	14	8	19	3
Stirling	15	4	22	0

Taking the average of these, there is an increase in twenty-five years equal to 30 per cent, and the wages of other classes of farm-servants have admittedly risen in the same proportion. But this general rise of agricultural wages has not gone on only since 1867, for the Commissioners of that date reported that "the earnings of Scottish agricultural labourers have increased very much during the last twenty to twenty-five years." And we must remember that, according to Sauerbeck, the purchasing power of money had also been rising, more especially so since 1861, at which time depopulation chiefly began to show itself. Agricultural depression has not caused the people to leave the country districts; the Scottish farmers are of opinion that the people leaving the country districts has helped largely to cause agricultural depression.

If, then, improved transport facilities, although they have increased agricultural imports and cheapened agricultural produce, have not appreciably curtailed agricultural operations and so thrown people out of employment, how, it may be asked, have they contributed to rural depopulation? They have *drawn* the people from the land. As we noted when speaking of the repeal of the Corn Laws, other industries have been greatly stimulated, including coal-mining, iron-smelting, engineering works, and manufactures generally. But besides the kind of encouragement which the repeal of the Corn Laws gave, improved means of transport have further enabled those industries to develop to an enormous extent their home, but more especially their foreign trade, by opening up new markets. As a consequence they have been enabled to offer more and more employment and better wages to labour. And so the rural labourers hear of this, they take a higher view of the value of their own services and of what constitutes comfort, and they go where they think they will be better paid. And the more stirring life of an industrial centre acts as a powerful magnet to them, awakened out of their old rural lethargy by the wider interests which improved means of communication alone could bring.

But such rural labourers are naturally unskilled in other work, and so for the most part they seek localities where there is the greatest demand for unskilled labour. In consequence we are not surprised to find from the English Census Returns that a great number of natives of Scotland are to be found in the active mining centres of Northumberland and Durham—numbers amounting in 1891 to 53,016 persons, the most of whom were males. Within Scotland, too, we find that in 1891 no less than 33,391 natives of Caithness, Sutherland, Ross and Cromarty, Inverness, and Argyll were to be found in the busy county of Lanarkshire alone. This latter would seem to indicate that a part of the poorer Highland crofters had been gradually awakening to a sense of their misery on hearing of the good wages which a stimulated industry had to offer, and gone south.

Immigration of Irish Labourers.

The next special cause of rural depopulation which we must refer to is the large *immigration of Irish agricultural labourers* in the month of May each year for the purpose of doing a summer's work. The number in 1894 is given at 2297, but this probably understates the actual facts.[1] About 1880 the number officially recorded was nearly double. These labourers return home to their families again in November after the turnip crop is stored, to come back the following spring. As they are all able-bodied men, it may be calculated how many Scottish labourers with their families this annual Irish immigration has enabled Scottish agriculture to dispense with. In making this calculation, however, it is necessary to bear in mind the great difficulty which, as we have already seen, the Scottish farmer finds in procuring native labour. If he knew he could not obtain Irish labour when he required it, he would probably simply cultivate less. And from our personal experience we know that in many cases he would.

Smuggling.

We may next refer to the suppression of *smuggling* and *illicit distillation.* Smuggling was previously carried on extensively round the coasts, and Highland whisky was made in Argyll, Aberdeen, and others of the northern counties to a very considerable extent *not* under the eye of the exciseman. The suppression of those "profitable" employments by the revenue officers is well known to have been followed by the emigration of a large number of families from the parts twenty or thirty years ago. This aspect of depopulation has been put in rather a comical light by certain novel-writers, who treated the subject in quite a pathetic vein.

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[1] See Report and Tables relating to Migratory Agricultural Labourers (Ireland) presented to Parliament, November 1894.

Another example of enforcement of the law leading to depopulation is the extra supervision now extended to tramps, gipsies, and "valiant beggars" generally. The painted waggons of the gipsies have almost disappeared from the village greens.

Deer-Forests.

According to statements made in the newspapers and by public speakers, the *extension of deer-forests* would seem to be the direct cause of depopulation in the Highlands. In how far these statements are founded on fact it is our next duty to inquire.

Deer-forests at the present time form not only a large area in the north of Scotland, but they are scattered over a large extent of country. In the following table, taken from the Royal Statistical Society's Journal for 1893, the afforested area is stated for each of the counties where deer-forests are to be found, and a distinction is made between those formed before and after 1883.

TABLE 29.

Counties containing deer-forest.	Acreage existing prior to 1883.	Acreage formed since 1883.	Total acreage in 1891.
Aberdeen . .	174,260	...	174,260
Argyll . . .	193,145	22,153	215,298
Banff . . .	65,000	...	65,000
Bute . . .	3,300 ?*	? *	3,300
Caithness . .	38,500	...	38,500
Forfar . . .	61,660	...	61,660
Inverness . .	755,535 ?*	146,246 ?*	901,781
Perth . . .	82,357	...	82,357
Ross and Cromarty .	751,588	60,731	812,319
Sutherland . .	166,808	45,850	212,658
Totals (Scotland) .	2,292,153	274,980	2,567,133

* The forest in Bute, and five of those in Inverness, have been added to subsequently to 1883, but the precise amounts so added are not stated.

About two-thirds of the total area is in Ross and Cromarty and Inverness, while Argyll and Sutherland, the two other most important crofting counties, hold about one-sixth of the whole area between them. It is evident from the totals that if deer-forests have been a cause of depopulation at all, they may have been a very potent one.

In 1885 a Royal Commission was appointed "To Inquire into the Condition of the Crofters and Cottars in the Highlands and Islands of Scotland." After an exhaustive inquiry, they reported as regards the formation of deer-forests as follows: "We have only found during the course of our inquiry one clearly established case in evidence of the removal of crofters for the purpose of adding to an already existing deer-forest, though other cases might be cited of the diminution of crofting area for the same purpose, and on further examination, examples of the transfer of families might possibly be discovered." The one case of removal referred to involved eighteen families, and occurred about thirty years ago. The Report of the Commission proceeds: "The existing deer-forests, which have been created for the most part within the last thirty years, have been, so far as made known to us, formed out of large farms by simply removing the sheep and allowing deer to fill up the ground so vacated. Depopulation, therefore, cannot be directly attributed to deer-forests, unless it can be shown that they employ fewer people than sheep-farms." Respecting this last point, they found that the number of people employed on deer-forests and sheep-farms was about the same.

But although deer-forests have been mostly formed from large sheep-farms, the large sheep-farms were themselves in many cases formed at the expense of crofting area at an earlier period, and only gave place to deer-forests when the latter were found to pay better.[1]

Emigration.

In considering the causes of rural depopulation, the last to which we shall refer is *emigration.* Emigration, however, is not a primary cause—it is rather the result of a complex combination of other causes, some of which we have already discussed. Emigration was stimulated by the suppression of smuggling, by the rising standard of comfort which we have watched coming into existence, by the extension of sheep-farming in the Highlands, and by the increased facilities for getting away. If emigration had no other causes than these, it would not be necessary to refer to it here under a separate heading.

Emigration, however, has received encouragement from other quarters—encouragement which was partly natural and partly artificial. What the natural encouragement consisted of it is scarcely necessary to point out. The growth and extension of new colonies, and the continued development of older settlements in distant lands, offered a permanent inducement to many to leave home. New countries were becoming richer and more prosperous, and those who wanted to change their home had an even greater encouragement to do so.

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[1] A parliamentary return, dated 5th August 1891, giving "particulars of all deer-forests and lands exclusively devoted to sport in Scotland," shows that in nearly all cases the rent after afforestation was greater than before.

Of artificial inducements to emigrate the population of Scotland has never been in want. An Act of Parliament passed in 1851 offered loans for promoting emigration from the Highlands, it being thought at that time that the distress there "would be most effectually relieved by affording facilities for the voluntary emigration of a portion of the population of these districts." Most of the Australasian Governments until 1887 offered pecuniary assistance to immigrants, and the Canadian Government continues to make free grants of land (160 acres) to settlers at the present time. The great shipping companies also found it advantageous to offer special terms to intending emigrants; and emigration offices exist all over the country.

The principal destinations of Scottish emigrants have always been America and Australia. During the earlier part of our period of inquiry the greater portion of the emigrants went to Australia, and even in 1875 two-thirds of the total sought the new continent in the south seas. Latterly, however, emigration to Australia has much fallen off, so that in 1891 little more than 10 per cent went to that quarter, while nearly 80 per cent of the total went to America, and of these by far the greater number to the United States. Africa has always been in less request.

As affording more satisfactory information than the emigration returns, let us look at the number of Scotchmen to be found at the present time in the principal countries to which they emigrate. The censuses of those countries enable us to determine their number accurately. Although it is etymologically forbidden to talk of emigration into England we shall give the facts for that country also, as well as for Ireland. (Table 30.)

TABLE 30.

Number of natives of Scotland in—	
United States (1890)	242,231
Canada (1891)	107,584
Cape of Good Hope (1891)	6,646
Australia (including New Zealand and Tasmania, 1891)	175,734
England and Wales (1891)	282,271
Ireland (1891)	27,323
Total	841,789

It is interesting to observe that the United States contains nearly as many Scotchmen as England and Wales does. Australia comes next, while Canada takes the fourth place.

Altogether, there are well on for a million Scotchmen living in those six countries. In exchange for this population Scotland receives only a very small return, the only country which gives back far more than it received being Ireland. (Table 31.)

TABLE 31.

Number of natives of certain countries present in Scotland in 1891 :—

United States	3,381
Canada, &c.	2,695
Cape of Good Hope	810
Australia	2,063
England and Wales	111,045
Ireland	194,807
Total	314,801

There is thus a net loss to Scotland of 526,988 persons. While a considerable part of the emigrants would have gone from the rural districts, the immigrants nearly all live in the towns.

But it must not be gathered from these facts that the special causes of emigration which we desire to keep in view at this point—viz., the progress of other countries and the artificial encouragement to emigrants—have been important factors in causing rural depopulation. In the first place, the great majority of the emigrants would go from urban places; in the second place, those who went from rural places would go for the most part owing to the causes of depopulation which we have previously discussed—more especially owing to the displacement of crofters; and in the third place, emigration as a whole does not seem to have borne any relation to the advance of rural depopulation. It has not increased concurrently with the growth of rural depopulation.

TABLE 32.

Date of Census.	Number of emigrants in previous ten years.	Total population.	Ten years emigrants in ratio per cent of total population.
1861	231,633	3,062,294	7·56
1871	117,002	3,360,018	3·48
1881	93,328	3,735,573	2·49
1891	217,418	4,025,647	5·40

As a matter of fact, emigration to foreign parts from any cause is comparatively rare from rural districts in the Lowlands. It is significant, however, that the largest amount of emigration indicated in the above table occurred during the same ten years (1851-61) in which the crofter counties Argyll, Inverness, Ross and Cromarty, and Sutherland suffered their greatest decline.

V. CONSEQUENCES.

Let us now turn to consider some of the *consequences* of rural depopulation.

Economic Results.

Of these consequences the least disastrous are the purely *economic*. It is only necessary to reflect for a moment upon the causes of depopulation to be convinced that this is so. It can never be a source of loss to a country to drive away subjects who had made a living by evading its judiciously enacted laws. It can never be a source of loss to a country to apply labour-saving machinery to its industries, whether agricultural or otherwise. It can never be a source of loss to a country to obtain foreign labour at a low cost, unless this foreign labour induces such undue competition that the standard of comfort of its own labourers falls. Finally, it can never be a source of loss to a country when improving transit facilities and other causes enable it to buy food cheaper than it can produce it at home. No doubt such a contingency dispenses with the services of a number of its subjects who had previously been employed in producing food, but the very fact that it has so dispensed with them is proof that they can be more profitably employed at some other work. The nation cannot buy food unless its subjects work at producing something else which can be exchanged for food, and its subjects will not work at producing something else unless it pays them better. Rural depopulation in Scotland is simply a partial realisation of the economic ideal—viz., that every country, and district, and place should devote its energies as far as possible to producing that for whose production it is most advantageously placed, and at the present time the people of Scotland find it more profitable to devote their energies to mining and manufactures than to agriculture. Economically, this is no matter for regret: it is a matter for congratulation that they should be so advantageously placed.

As to the extensive substitution of sheep-farms for crofts in several Highland districts, this can well be viewed as a moral hardship. But in consideration of the poverty-stricken condition of the great majority of these crofters, to speak of their removal as economically disastrous, either to themselves or to the country as a whole, would in this nineteenth century be impossible.

Rural Depopulation and the Wellbeing of the People.

The most important of the evil consequences of rural depopulation is the deteriorating effect which a town life has upon the *health and energy of the inhabitants* themselves. That life in the country is more healthy than in the crowded city is a kind of popular axiom. If any doubt is held upon this point it is only necessary to compare the death-rates of great cities with those of rural districts. Table 33, for example, shows the death-rates in the five registration groups of districts in Scotland in 1891.

TABLE 33.

Registration groups of districts.	Percentage of deaths to population.		
	Males.	Females.	Total.
Principal towns	2·37	2·22	2·29
Large towns	2·20	2·15	2·18
Small towns	2·08	1·99	2·03
Mainland-rural	1·75	1·72	1·73
Insular-rural	1·77	1·78	1·78

Such a table will surprise no one. And the reason why the death-rate should be lower in the country is not far to seek. Fresh air, untainted food, abundant exercise, early hours—

> "Early to bed and early to rise
> Makes a man healthy, wealthy, and wise"

—all contribute to a long and healthy life. According to a recent table of Drs Farr and Ogle, farmers and farm-labourers have an "extremely low" and a "very low" death-rate in comparison with those engaged in other industries. Taking ages of 25–60, after clergymen, farmers, graziers, and gardeners have the healthiest occupations, and enjoy the greatest immunity from diseases of the respiratory system. We are also told in the Scottish Census Report of 1871 that "a town life seems to render the inhabitants much more liable to diseases of the chest" —the class of disease which causes the most deaths of all.

It is not only length of life, however, which is important; health and strength during life have to be considered. A nation's prosperity depends in the first place upon the health and strength of its citizens. This, indeed, has long been recognised. King Richard II. of England is recorded to have specially fostered a declining rural popoulation five centuries ago, on the ground that these were of the greatest service in time of war; and it is believed that the first military Powers of the day are still alive to the importance of this point. And if a typical rural population is better fitted than a corresponding urban population for actual warfare, for the same reasons it must be better fitted for the war of industry. It is not only that such a population has greater physical strength; it has that wider attribute which health gives, of hope, of courage, and of untiring energy.

Of even more importance than the deteriorating effects of a town life upon the existing generation is the influence which a town life has upon the numbers and vigour of generations yet unborn. An interesting investigation by Galton into the numbers which the town and rural populations respectively supply to the succeeding generations is recorded in the Royal Statistical Society's Journal for 1871. He found that the rate of supply in towns to the next adult generation is only 77 per cent of that in the country. In two generations the proportion falls to 59 per cent—*i.e.*, the adult grandchildren of artisan townsfolk are little more than half as numerous as those of labouring people who live in healthy country districts. And the view that the existence of a vigorous rural population conduces to the welfare of future generations is fully recognised in the Report of the Crofters Commission of 1883, where it concludes: "It cannot be indifferent to the whole nation, constituted as the nation now is, to possess within its borders a people hardy, skilful, and prolific, as an ever-flowing fountain of renovating life."

Many other witnesses could be cited who would give their evidence to the same effect, but it is unnecessary to call upon them. The importance to the whole nation of maintaining a numerous rural population is recognised by all thoughtful men, and forms the best argument for the legislative encouragement of rural industry.

LOUPING-ILL.

FURTHER RESEARCHES INTO THE CAUSATION AND PREVENTION OF LOUPING-ILL OR TREMBLING IN SHEEP.

IXODIC TOXÆMIA.

By Principal WILLIAMS, F.R.C.V.S., F.R.S.E.

ON 19th December 1893 I was requested by the Highland and Agricultural Society of Scotland to conduct a further investigation and experiments to determine whether my former investigations, carried on in 1881-82, could be borne out or contradicted—some writers having expressed great doubts as to the correctness of my conclusion, others going so far as to state that they had not been laid on a scientific basis. From communications received during the summer of 1893 I was informed that the disease was very prevalent in certain parts of Ross-shire. My informant wrote to me to the following effect: "Ticks are very prevalent in this district. The heifer which died in the early summer was quite covered with them. Out of 183 sheep about 40 died in a few days, after having been removed from the hills to some partly woodland pasture, where they became covered with ticks, whereas those remaining on the hills, where there are few or no ticks, did not suffer." The symptoms given by this correspondent differ in no particular from those described in my former observations—namely, paralysis of some muscles, spasmodic contraction of others, &c.

In April 1894, in consequence of a communication from Mr Meiklejohn, Novar, I made arrangements to study the disease in that district; but being unable to leave Edinburgh at the time, the duty was undertaken by Dr James Hunter, Professor of Physiology at the New Veterinary College, and who had assisted me in my former investigations. Dr Hunter states:—

"*April* 12, 1894.—On undertaking the journey I took all requisites with me, for not only examining microscopically upon the spot the pathological conditions, but also all necessary requirements for preparing cultivation-media for inoculation purposes. In performing the latter every care was taken to prevent other than the germ in question producing results. There being no cases in the immediate neighbourhood of Mr Meiklejohn's residence, he conveyed me to the farm of Redcastle on the same estate, where some cases had occurred. Upon arrival there we found that a sheep had just died within an hour or two of our arrival, which by the shepherd's (Mr Stewart) account had shown before death what he considered all the symptoms of louping-ill. I immediately had a post-mortem, and found the special conditions to agree (as far as naked-eye appearances could tell) with those seen in previous cases. Gelatine media were inoculated from the cerebro-spinal fluid, the blood, pericardial fluid, and general muscle juice. In this case the lumbar cord presented the morbid changes to a much greater extent than any other part; in fact the dorsal cord seemed normal, while slight changes were noticeable at the cervical enlargement. This animal had by account just passed the most acute stage, and was believed to be in the way of recovery.

"On the same day I was shown a sheep with symptoms strongly suggestive of louping-ill, the shepherd having placed that animal apart for my inspection when he was informed of my coming. The symptoms here certainly resembled, so far as affection of the hind limbs was concerned, a case of louping-ill; but from the first I did not quite think, from other conditions, principally the absence of the jelly-like exudate around the cord, and also the expression of the eye, along with the manner in which the animal fell when disturbed during life, that this was a typical case. Everything was done exactly as with the former case, and we retired to Mr Meiklejohn's residence for the evening. I afterwards felt somewhat dissatisfied, when it occurred to me that the sheep had looked very much like a case of sturdy, and I was only sorry that I had not examined the brain. For this purpose I returned early next morning, opened the cranium, and found a well-advanced hydatid cyst involving a greater part of the left frontal convolution (we may say here that the results from the gelatine inoculation done from the case gave purely negative results, so far as any special germ is concerned; certainly they did not show the characteristic organisms found in louping-ill). After this the shepherd at this same farm (Redcastle) showed me a ewe that had long suffered from louping-ill. It appeared from his account that at first the symptoms had been well marked; that subsequently a long slow process of recovery took place, which, however, never extended to a regain of power in the hind limbs. For the greater part of the day the animal lay in one spot, although when roused it was just able to stand, but scarcely to progress. It was much emaciated, although it had been carefully fed—in fact was treated as a pet; it was examined after slaughter with all precautions mentioned above. A very considerable naked-eye change was observed in both lumbar and cervical regions of the cord, the latter showing the pathological changes in a well-marked manner as to the surrounding jelly, &c.; while in the lumbar region of the cord there had been a considerable attempt at recovery, the cord being, however, in a very shrunken condition.

"The gelatine inoculation from this case showed the typical organism without doubt. In neither case did inoculation from pericardial fluid give any results.

"In all the cases, and as soon as possible after the inoculations were done, microscopical examination of the surroundings of the cord was made, with results entirely agreeing with what had been expected, and the organism shown to Mr Meiklejohn and Mr Stewart."

On Dr Hunter's return from Skye he accompanied me to Dalmally, where we found the disease to prevail upon several sheep-farms, and that ticks were numerous. On our return I made the following experiments upon sheep which had been kept at the College for several weeks:—

Louping-Ill Inoculations.

1894.

May 2. Sheep inoculated at 3.25 P.M. with cultivation from sheep killed at Brown's farm, Dalmally, whilst suffering from louping-ill. Temperature, 103° F.

" 3. Temperature, 102° F.

May 4. Partial paralysis of the fore-limbs; convulsive twitchings or "trembling"; foaming at the mouth. Temperature, 102° F.
„ 5. Complete paralysis of the fore-limbs; partial paralysis of the hind-limbs; convulsive movements, &c., increased. Temperature, 104° F.
„ 6. Sheep died, 8 A.M. Post-mortem revealed louping-ill lesions.

On the same day, May 2, from ten to fifteen living ticks were placed on each of the remaining sheep, six in number. These were examined on the following morning, when it was found that the ticks had almost entirely disappeared. They were re-examined daily until June 2, and giving no evidence of infection, all the ticks having evidently dropped off without becoming adherent to the skin of the sheep, the following experiments were made:—

Inoculations with cultivations from ticks.

June 2. Sheep No. 1 inoculated, 2.30 P.M. Temperature, 104⅘° F.
„ 3. Temperature, 103° F.
„ 4. Temperature, 104° F.
„ 5. Temperature, 104° F.
„ 6. Temperature, 104° F. Results negative.
„ 9. Sheep No. 2 inoculated, 2 P.M. Temperature, 104⅘° F.
„ 10. Temperature, 105° F.
„ 11. Temperature, 105° F.
„ 12. Temperature, 103° F. Results negative.
„ 16. Sheep No. 3 inoculated, 1 P.M. Temperature, 103° F.
„ 17. Temperature, 103° F.
„ 18. Temperature, 102·4° F.
„ 19. Temperature, 102·6° F.
„ 20. Temperature, 102° F. Results negative.
„ 16. Sheep No. 4 inoculated with tick cultivation in egg albumen, 1 P.M. Temperature, 103·4° F.
„ 17. Temperature, 103° F.
„ 18. Temperature, 103° F.
„ 19. Temperature, 103·2° F.
„ 20. Temperature, 104° F. Results negative.
„ 20. Tup No. 5 inoculated, 4.30 P.M. Temperature, 103° F.
„ 21. Temperature, 105° F.
„ 22. Temperature, 103° F.
„ 23. Temperature, 103° F.
„ 24. Temperature, 103·6° F.
„ 25. Temperature, 103° F. Results negative.
„ 29. Sheep No. 6 inoculated *in vein*. Temperature, 104° F.
„ 30. Temperature, 104° F.
July 1. Temperature, 103·8° F. Results negative.
June 29. Sheep No. 1 re-inoculated *in back* (subcutaneously). Temperature, 103° F.
„ 30. Temperature, 103·8° F.
July 1. Temperature, 103° F. Results negative.

The attempt to induce the disease by placing the ticks upon healthy sheep, and by inoculations with the organism cultivated from ticks, having proved unsatisfactory, and the season being too far advanced for further experiments, I determined to adopt another line of procedure during the season 1895. I may here state that all the experiments with living ticks had hitherto given negative results: ticks, except small ones and those which had not yet become adherent to the sheep, could not be induced to cling to a fresh host; no matter how many fairly or fully grown ticks were placed on a sheep, they would disappear in a few hours.

I then determined to send sheep during the following year to tick-infested districts; to muzzle these sheep in order to prevent them from grazing; to feed and water them indoors with food sent from the College; and to allow them to remain in the infested district until infested with the ticks, then have them returned to the College for examination and further study.

In 1895 advertisements were sent to the newspapers by your Secretary, Mr Macdonald, but no communications were received until the second week in May—one from Dumfriesshire and another from Hawick. On May 11 my son, Professor W. O. Williams, visited the Hawick district, but the cases seen there and the morbid specimens brought home were not those of "louping-ill"; they are therefore not further referred to.

On the same day, May 11, 1895, Leithen Hall, near Wamphray, was, at the request of Mr Hamilton, visited. I there found several sheep and lambs affected; but as the season was too far advanced, and the ticks having disappeared, we were too late for the experimental investigation which I intended carrying out. I was accompanied on this occasion by Mr Thompson, veterinary surgeon, Aspatria, who was very desirous of testing the effects of salt applied to the land for the destruction of the old grasses, which afforded a cover for the ticks. We found that ticks had always been very numerous in a 20-acre hill-park surrounded by a wall, where louping-ill had been most fatal; and for the purpose of testing the value of the salt, Mr Thompson generously presented Mr Hamilton with ten tons of salt, carriage paid to Moffat, to be applied to this park. The result was that the old grasses were killed out, and were succeeded by a most luxuriant new growth. This park was reserved for the following season's (1896) experiments, and on April 21, 1896, having received a report from Mr Hamilton, and all arrangements having been made, I requested Mr P. Moir, M.R.C.V.S., to proceed to Leithen Hall to superintend the experiments which I proposed to carry out—viz., to turn muzzled sheep out on the tick-infested pasture until they were covered with the parasites, feeding them on hay, &c., indoors, and thus determine whether the disease was due to the pasturage or the ticks. It may be stated here that sixteen sheep had been bought from Mr Skirving, and my intention was to divide them into four lots—three lots of four sheep to be sent to infected districts, and one lot kept at the College for experiment; but owing to the paucity of reports they had otherwise to be dealt with.

The following is a brief account of Mr Moir's visit to Leithen Hall:—

"*April* 21, 1896.—On the afternoon of this date proceeded to Wamphray, Dumfriesshire, accompanied by Mr Lawrie, student, New Veterinary College. Leithen Hall farm, occupied by Mr Hamilton, was our destination, it being about two miles from the railway station. On arrival found that preparation had been made to house the four sheep that were in transit per goods train from Edinburgh for the purpose of being infested with the ticks, for which this farm has been notorious in conjunction with yearly outbreaks of the sheep disease louping-ill. Messrs Hamilton reported that although the ticks had been seen this month, they were not nearly so numerous as they were last year at the same time, and that they had seen only one case of louping-ill among the flocks, which had died the day before our arrival. This immunity they attributed to the exceptionally mild winter, which had induced a good growth of new grass, and also that on the worst part of their farm for this disease, common salt had been applied with splendid results. The character of the grass had been altered for the better, and no ticks, consequently no disease, had been seen. It was thought that, judging from the average number per cent that contracted the disease, the experiment with four sheep was unlikely to be successful, even were they covered with ticks. At the same time it is a singular fact that strange sheep put on infected pasture are more readily attacked with the disease than those bred on the farm. The Messrs Hamilton have all their lives been sheep-farmers, and firmly believe that 'no ticks, no louping-ill' is thoroughly established.

"We visited the adjoining farm, occupied and owned by Mr Carruthers. He removed there from the south of Scotland (the Hawick district) about fifty years ago, and placed a large number of sheep from that part on his new farm. The mortality was very great, quite 30 per cent. He reduced this percentage by limiting the introduction of fresh sheep, and devoting his energies towards the increase and retention of sheep home-bred. The loss was thus reduced to 10 per cent; and when he became the owner of the land, he limed and drained to such an extent that at this date a case of louping-ill is very rare. He is a firm believer in 'no ticks, no louping-ill.' He frequently witnessed in the old days bullocks affected with the disease. He still washes his sheep with Bigges's Dip in solution, and lays down the rule to be good to the land, and louping-ill will disappear wherever it has been seen.

"At 4 A.M. on the morning of the 22d April we accompanied the shepherd to the hill, and found some 600 ewes and their lambs all in good health. About thirty-six hours previously the shepherd had found a hogg dead that for two days previously showed very pronounced symptoms of louping-ill. He had, after skinning it, preserved the carcass for our examination in a cavern on the hill. We found it to be cool and quite fresh, with the head cut off. This we regretted; but he stated that a large quantity of fluid had escaped from the cranial cavity on section. At 9 A.M. we (having had the carcass and head carried to the farmhouse) made an examination of all the internal organs, also of the brain and spinal cord. The jelly-like exudate was present in great abundance, particularly in the lumbar portion of the spinal canal; the spinal cord was inflamed in patches along its whole length; but the jelly-like exudate was confined to the lumbar region.

"The test sheep having arrived—they having been driven from the station with a mouthpiece on each, which effectually prevented them from feeding — the muzzles being removed, they were fed with oats and hay and watered, also rested for a few hours. The mouthpieces were then re-applied, and about one o'clock they were turned on to a field where ticks were known to exist. About 10 A.M. the following day they were returned to the outhouse to be fed and watered. A few minute ticks were seen about the inner parts of the fore-legs. At 1 P.M. they were again turned out with their mouths securely covered. Every day until Tuesday, the 28th, this system was carried out with the assistance of Mr A. Hamilton and his shepherd, whose interest in the experiment was very keen, and whose assistance was invaluable."

On 30th April all the four sheep returned from Leithen Hall apparently well, except one whitefaced ewe, upon which a few ticks were found. She looked slightly unwell, had tremors about the jaws, and seemed in a dazed condition. These symptoms, however, passed off; but she lost some flesh, although well fed. The symptoms of tremblings — the tremors — reappeared, and on the 25th of May she became paralysed in both hind limbs, and died on the 28th; and on post-mortem examination the characteristic jelly-like myxodæma was found, particularly in the lumbar portion of the spinal canal, with patches of congestions all along the course of the spinal cord, and, as is common in many cases, congestion and dropsy of upper part of the spinal cord and *medulla oblongata*, the jelly containing the characteristic organism well developed. On April 28 twelve living ticks, several of them being small ones, were received from Leithen Hall, and placed upon the sheep retained at the College. This sheep was kept apart from the others after their return from Leithen Hall. Ten days afterwards, May 8, this sheep commenced to manifest symptoms of louping-ill. There were tremors, a brilliant eye, uncertain gait, convulsions, and finally complete paralysis. She died on the 10th—that is to say, on the twelfth day after the ticks were laid on. The post-mortem revealed congestion of the brain and spinal cord, but there was little or no myxodæmatous or jelly-like exudation; there was, however, a considerable amount of effusion of serum around the heart. This serum coagulated into a jelly-like mass, which on microscopic examination was found to contain abundance of the characteristic organism. On May 8 a whitefaced sheep, which also had a few ticks adherent on her return from Leithen Hall, presented signs of being unwell, but the symptoms had no characteristic features until about the 12th, when she became partially paralysed. She died during the night of the 14th, and the post-mortem revealed the characteristic jelly-like exudate in the spinal canal, which on microscopic examination was found to contain well-developed mycelium and spores of the organism.

In so far as tick inoculations were concerned, three out of five sheep that were infested by ticks succumbed, after presenting typical symptoms during life and the characteristic conditions of the nervous system on post-mortem examination. Of these, two came from the Leithen Hall pastures with ticks on them; the other had ticks placed upon it at the College. The other two sheep out of the four sent to Wamphray and not infected by the ticks remained perfectly healthy, and were kept for further observations.

On May 13 ten sheep, out of eleven obtained from Mr Skirving, were sent from Edinburgh to Leithen Hall, as I supposed the ticks would now be more numerous. They safely arrived, were muzzled in the usual way, and remained there until the 21st, when they returned apparently healthy.

The student, Mr Morgan Williams, who accompanied these sheep, wrote to me as follows: "The sheep were all muzzled, and examined for seven days, but owing to the early season this year very few ticks were found on the farms, neither were there any sheep affected with louping-ill during the above period. Out of the ten sheep, two only were found with ticks on, and, as far as could be seen, there were only three ticks on each. Nothing abnormal was detected on these from the time they came under my charge until they were brought back to the College. Mr Hamilton informed me that fewer of their sheep were infested this season with ticks, and consequently fewer were affected with louping-ill; that they were all dipped this season, as recommended by Professor Williams. He also informed me that a top-dressing of salt, 10 cwt. to the acre, gratuitously supplied by Mr Thompson, V.S., Aspatria, was applied to one park, which had been previously badly infested with ticks; but since the application of the salt the sheep cannot be kept away from the dressed park. But Mr Hamilton could not inform me whether this dressing had made any difference as regards the ticks, because, as above stated, the sheep were dipped, and they did not find any on the sheep after the application (dip), irrespective of the part of the farm the sheep were grazed on."

On their return to the College, 21st May, these ten sheep were carefully examined, but no ticks could be found upon any of them. They were carefully watched, and their temperatures taken daily until 27th May, when four of them, including the one retained at the College, were inoculated with cultivation material from the spinal canal of the sheep which had died on the 12th. The cultivation material was filled with the well-developed organism. One of these sheep died on May 29, having presented very acute symptoms, which we supposed were due to some septic blood-poisoning; but on making a post-mortem examination, the condition of the spinal cord and brain left no doubt in our minds as to the true nature of the disease. Although there was no jelly-like exudate in the spinal canal, the cord itself was inflamed in patches, and the organism could be detected microscopically and cultivated in the usual way. On 1st June a second inoculated sheep died, and on 5th June another died. Thus three out of four inoculated on 27th May died. The fourth remained healthy.

On May 5 I visited Mr James R. W. Wallace's farm of Auchenbrack, near Thornhill, and there met Professor Wallace, who takes a keen interest in this question. We found several sheep and lambs affected—some dying, some recovering, and some dead; but Mr Wallace thought the mortality had not been as great as usual. The symptoms during life and the post-mortem conditions revealed were undoubtedly those of louping-ill. No experiments beyond tube cultivations were made, but it was arranged—Mr Wallace generously offering to perform the experiment free of expense—to buy about a score of sheep and place them muzzled on that part of the farm where trembling and ticks committed the greatest havoc. The sheep, nineteen blackfaced hoggs, were bought on May 13, and fourteen of them were muzzled and turned out during the day, and described by Mr Wallace as follows: "*13th May.*—Will turn out fourteen of the ewe hoggs on the hill on which there is trembling, with the muzzles on, and take them in again in the morning, and driving them to the fields free from trembling to feed during the day. *26th May.*—The sheep have been a week on, and I only see one tick each on three of them. The season being so early, I think the time is now past, as fewer of my own sheep have been affected this year; but I will go on with the hoggs this week, and then turn them on sound land free of trembling for a while, till we see if anything turns up." On 1st June one of the ewe hoggs died, and was sent to the College, where a post-mortem examination was made, but no trace of louping-ill could be detected. On 6th July Mr Wallace wrote again as follows: "The blackfaced ewe hoggs I had muzzled and put to the hill to test for trembling have all done well since they were turned out. It was rather late for this early season, so a better result might be got another year. There were not so many ticks and less trembling with me this season than usual, but some places were worse. I did not think the hogg that died, died of trembling, but I thought it better to send you the carcass, as it was one of the lot."

The following plan (fig. 55) illustrates a portion of Mr Wallace's farm, and proves that where there are no ticks there is no louping.

Summary Conclusions.

This investigation has confirmed my previous conclusions, that where there are no ticks there is no louping-ill; that the ticks are in a state of activity but for a short period in early summer, and coexistent with "louping-ill." In Skye, where it seems there are two broods of ticks, there are two outbreaks of the disease—one in spring and one in the autumn. It is true that occasional cases of the disease may be observed during summer and autumn even in the south, but these are exceptional, and always associated with the presence of a few ticks hatched during these seasons—late broods.

Having arrived at these conclusions, I advise that the methods of procedure for the extirpation of the disease should be—

1. That all old and rough grasses harbouring ticks should be burnt or eaten down by cattle.
2. That the land should be improved by dressings of common salt, lime, or a combination of both, or some cheap phosphatic manure such as basic slag.
3. That when the weather admits the sheep should be dipped in some of the carbolic preparations, but when this is impossible they should be pastured on clean lands during the tick season.
4. That when a ewe with a lamb at her side is seized with the disease, the lamb should be removed, as cultivations from such ewe's milk have revealed the organism in various stages.

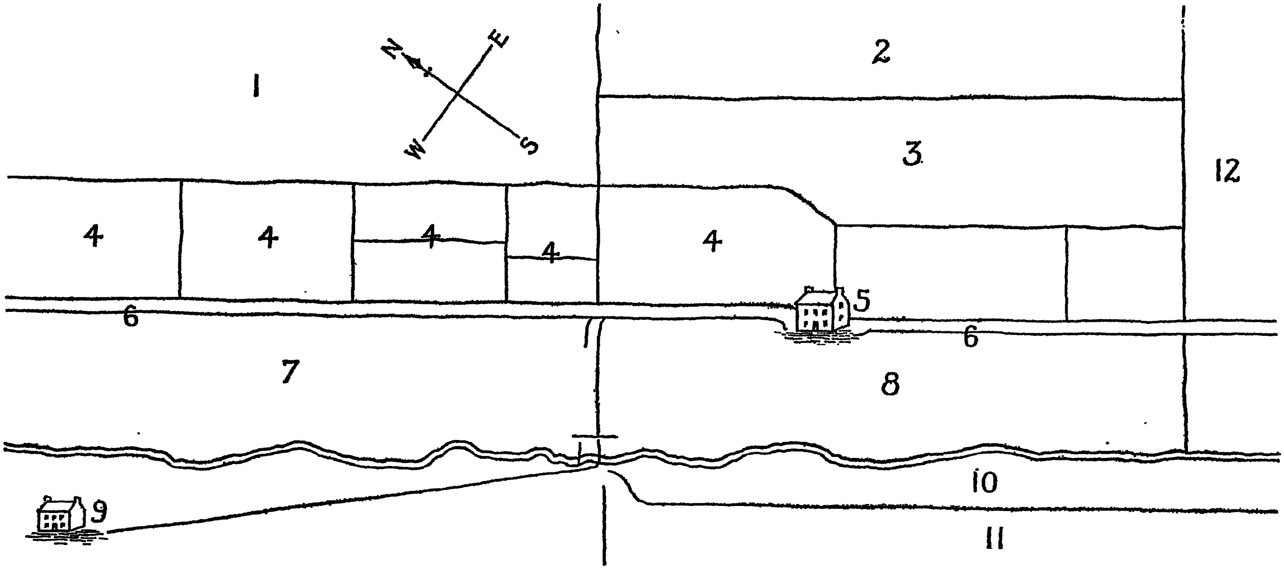

Fig. 55.—*Plan of Auchenbrack Farm.*

1. 900 acres hill-land. Ticks abundant, trembling or louping-ill bad in the tick season.
2. Few ticks, little trembling.
3. Almost free from both ticks and trembling.
4. Some ticks, some trembling.
5. Farmhouse.
6. Public road.
7. Almost free from ticks and trembling.
8. Free from ticks and trembling. Meadow-land.
9. Kilmark dairy.
10. Meadow. Free.
11. Meadow-pasture. Free; to feed experimental sheep on when muzzles are taken off.
12. Benan Farm. Free.

Description of Plates.

The illustrations (figs. 56 to 65), reproduced from Dr Hunter's original photo-micrographs, illustrate the various stages of the louping-ill organism:—

Fig. 56 shows under a medium power (500 diameters) the appearance of a fully developed mycelium, presenting here and there the appearance of approaching segmentation.

Fig. 57, from the blood of a sheep inoculated with the above, shows, under 1500 diameters, the complete development of the so-called spore filament stage. The spores are seen both as dark and light spherules, depending on their focal positions.

Fig. 58, under the same power as fig. 56, shows the existence of similar segmented and unsegmented filaments in a cultivation from the tick at the tenth day.

Fig. 59 shows portion of same slide under 1500 diameters. Here a very complete series of developmental stages in the existence of the free bacterioid form of the organism is seen, several degrees of spore formation being visible.

Fig. 60. The simple unsegmented filaments as usually seen in the jelly from the spinal canal are here seen under 500 diameters.

Fig. 61 presents, under 1500 diameters, a view of the fully developed rods as seen in cultivation from a sheep's cardiac blood.

Fig. 62, under same power, shows also fully developed rods as seen in a specimen prepared from the spinal canal of a "ticked" sheep.

Fig. 63. Various stages in the filament formation are here seen under 500 diameters. The animal had died from louping-ill. The specimen was from a cultivation of spinal-canal jelly.

Fig. 64 is a portion of above, under 1500 diameters, showing both longitudinal and transverse segmentation of the filaments.

Fig. 65 shows, under a power of 500 diameters, the characteristic appearance of the segmenting filaments as usually met with in an early stage. The specimen was from a cultivation of cardiac blood of a lamb dead from the disease.

By comparing these photo-micrographs with the microscopic drawings published in my article on Louping-Ill in 1883,[1] it will be observed that the similarity, if not identity, is maintained throughout. From the long and exhaustive investigation of this disease I am now more convinced than ever that the organism or organisms are most notably developed in one stage as minute moulds, probably on old grasses—in this condition innocuous to the higher animal until it has passed through the tick; that in the body of the tick it attains properties which are virulent when subsequently communicated to the sheep by the tick.

It will be observed that in the louping-ill organism there are met with, during its complete life-history, those involving series of transitions assumed by G. Zopf and other bacteriologists to be more or less presented during the development of

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[1] See 'Transactions,' 1883, Fourth Series, vol. xv.

all so-called micro-organisms. Leaving it, as most have done, to be decided whether or not the forms seen in such cases as the present are the exact counterparts of typical micro-cocci, bacteria, or bacilli, there is no doubt that such variations do occur during the growth of the louping-ill organism. But further, when it has been found that the inoculation of healthy animals by certain of these forms has led to the appearance of the others in great constancy under varied conditions, the identity of a series of forms can no longer be disputed. It must, however, be confessed that as yet the true relationship and significance of the individual forms have not been so fully made out as could be wished from a purely biological point of view; but the pathogenic action peculiar to the organism has, by all the usual modes of research, been placed beyond cavil. This is not to be wondered at, when it is remembered that several well-known micro-organisms have stages in their development that are by no means fully understood. Apparently the simple unsegmented filaments are generally met with in the spinal myxodæma of the affected animal, while the higher forms of spore filaments, fully segmented and free rods, closely resembling the typical bacillus, were seen, so far as the present observations go, mostly in cultivations outside the animal body. They, however, presented themselves with great constancy in cultivations of the spinal fluid and myxodæma—jelly-like material—under every possible variation, produced by change of media, place, and manner of experimenting. It must therefore be concluded that they are various stages in the life-history of the same organism. As an organism certainly more nearly allied to the moulds than to any pathogenic type previously described, it is interesting, as being, so far as I am aware, the first known instance of what appears to be a mould, in one stage at least, proving capable of producing pathogenic effects upon the higher animals, and it is also interesting to note that this pathogenic property is only acquired after passage through the body of the tick, a state of matters now found to exist in other diseases.

When this disease was first investigated by me, the influence of the tick in inducing the so-called Texas fever, and other similar sources of inoculation, had not been investigated; but now it is proved beyond all doubt that the tick disease, as well as other diseases communicated by insects, is known in various parts of the world.

One remarkable circumstance might in conclusion be added—viz., that whilst in this country the tick is but seldom injurious to other animals than sheep, in other parts of the world its pathogenic effects are mostly confined to horned cattle, although it attacks human beings, sheep, horses, mules, &c.

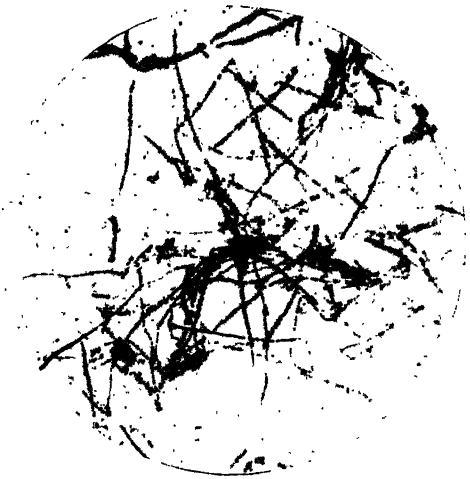

Fig. 56.—*Filamentous stage of the organism in spinal canal of sheep dead from louping-ill, May* 1896.

500 *diameters.*

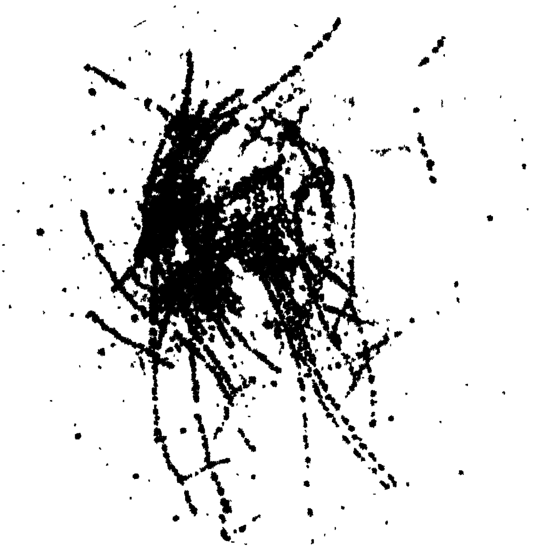

Fig. 57.—*Filaments breaking up into spores. Cultivation from blood of sheep inoculated with material shown in Fig.* 56.

1500 *diameters.*

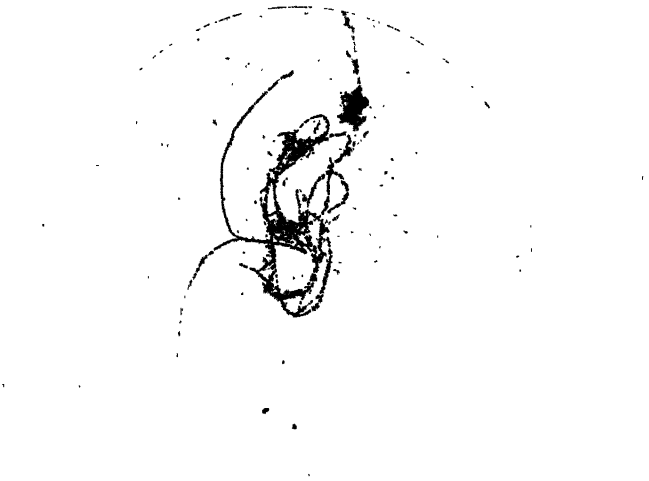

Fig. 58.—*Cultivation from tick, tenth day.*
500 *diameters.*

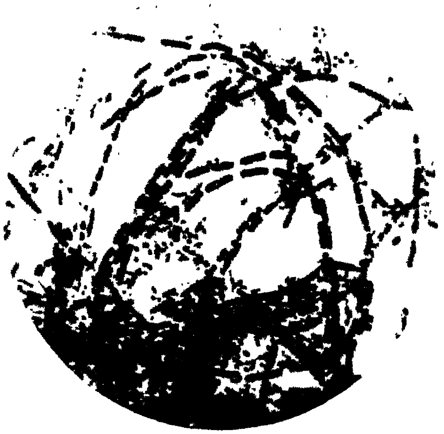

Fig. 59.—*Portion of Fig.* 58 *under a higher power.*
1500 *diameters.*

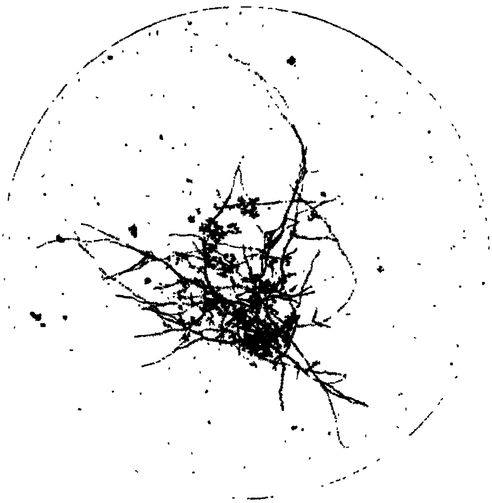

Fig. 60.—*Jelly from spinal canal of Twiglees lamb,* 1882.
500 *diameters.*

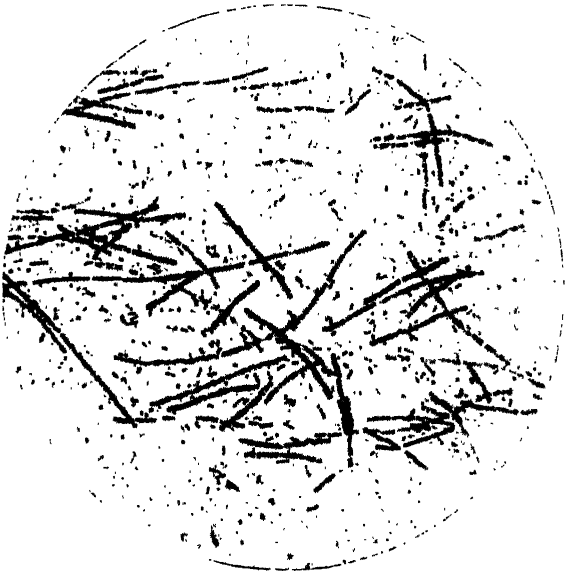

Fig. 61.—*Cultivation from cardiac blood of sheep which died after being inoculated, June* 5, 1896.
1500 *diameters.*

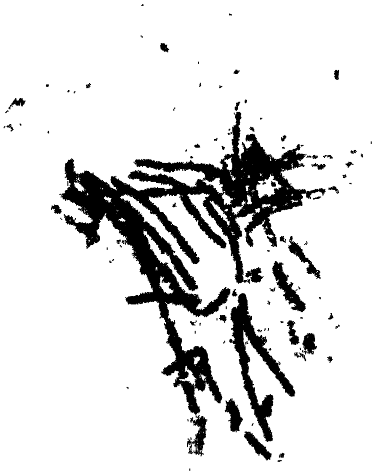

Fig. 62.—*From spinal canal of ticked sheep, died at College, May* 10, 1896.
1500 *diameters.*

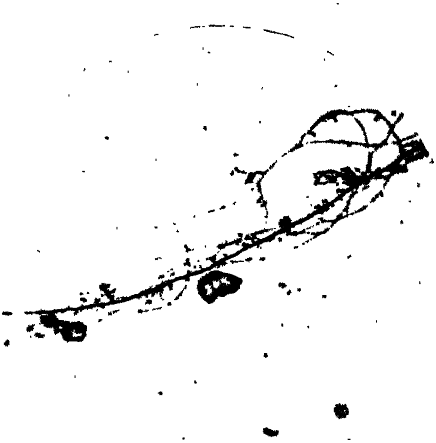

Fig. 63.—*Cultivation of spinal fluid from sheep dead from louping-ill,* 1896.
500 *diameters.*

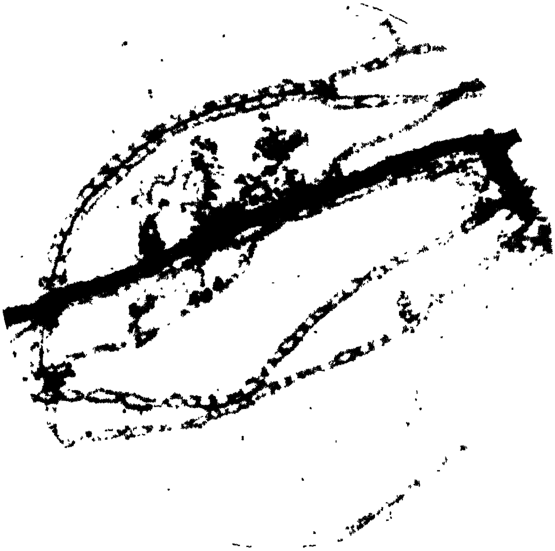

Fig. 64.—*Portion of Fig.* 63 *under a higher power.*
1500 *diameters.*

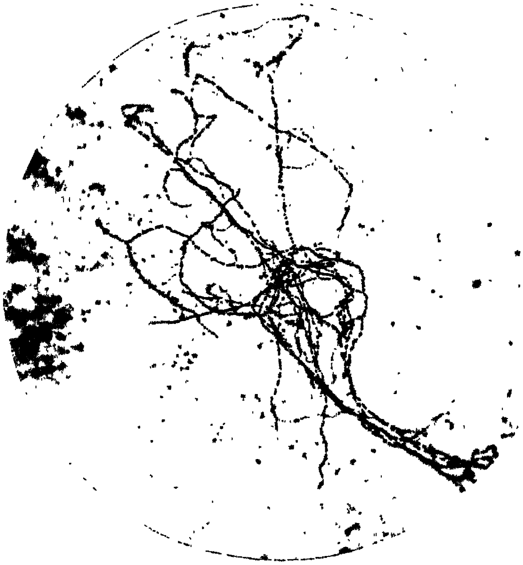

Fig. 65.—*Cultivation from cardiac blood, Auchenbrack lamb (agar-agar, ten days), May* 1896.
500 *diameters.*

ANALYSES OF SWEDES GROWN BY MEMBERS OF THE CARSE OF GOWRIE AND DUNDEE DISTRICT FARMERS' CLUB.

By Dr A. P. Aitken.

Last year a series of experiments was carried out by the Carse of Gowrie and Dundee District Farmers' Club on various farms, the object being to test the relative productiveness of different kinds of swedes of approved quality grown in the district.

An application was made to the Highland and Agricultural Society asking that samples of a certain number of them might be analysed by me for the benefit of the members of the Society in the district. This request was granted, and the following seven samples were received by me on 22d February, analysed as under, and reported to Mr George Bell, treasurer of the club:—

No. 1. "Eclipse," from black soil at South Inchmichael. 13 bulbs, 5 to 6 inches diameter.
No. 2. "Eclipse," from clay soil at South Inchmichael. 13 bulbs, 5 to 6 inches diameter.
No. 3. "Best of All," from black soil at Berryhill. 16 bulbs, 6 to 8 inches diameter.
No. 4. "Stirling Castle," from black soil at Berryhill. 20 bulbs, 4 to 6 inches diameter.
No. 5. "Eclipse," from red soil at East Pilmore. 20 bulbs, 4 to 5 inches diameter.
No. 6. "Drummond," from clay soil at Unthank. 18 bulbs, 4 to 5 inches diameter.
No. 7. "Kirkcaldy," from clay soil at Unthank. 18 bulbs, 4 to 5 inches diameter.

All these samples consisted of good sound turnips. The individuals of each lot were very equal in size and character, showing that they had been carefully selected. It would have been better had the samples been larger, but a carefully selected set of 13 to 20 bulbs may be expected to yield fairly reliable results.

The first point that claims attention in these analyses is the wide range of difference in the percentage of dry matter.

The first three samples contained least dry matter. These were also the largest turnips. This illustrates a well-established fact that greater size in turnips is generally associated with greater wetness. Nevertheless it is not always so, as is shown by sample No. 3, which were by far the largest bulbs, but they contained less moisture than Nos. 1 and 2. Moreover, No. 4, which surpassed all the others in the proportion of dry matter, did not consist of bulbs that were markedly smaller than those of Nos. 5, 6, and 7. The size of turnips is influenced by a number of circumstances, such as the kind of soil, the manurial treatment, the space given them, and the season.

Had these samples been larger, so that they could be trusted to be fairly representative of the average growth, it would be possible to estimate approximately the actual amount of dry matter, or real food, per acre by multiplying the total weight of the crop by the percentage of dry matter and dividing by 100.

	1	2	3	4	5	6	7
Moisture . . .	91·84	91·06	90·83	88·91	90·52	89·50	90·20
Dry matter[1] . . .	8·16	8·94	9·17	11·09	9·48	10·50	9·80
	100·00	100·00	100·00	100·00	100·00	100·00	100·00
[1] Containing sugar . .	5·12	5·78	5·87	6·86	6·04	6·37	5·85
Analysis of solids.							
Nitrogenous matter—							
Albumen	8·97	5·03	7·87	6·56	7·66	7·87	7·44
Amides, &c. (reckoned as albumen) . .	4·15	7·00	5·47	6·35	3·93	4·38	6·78
Carbohydrates . .	64·13	71·65	65·62	70·37	70·71	70·53	68·26
Woody fibre . . .	15·75	10·55	15·17	10·92	12·10	11·07	10·07
Ash	7·00	5·77	5·87	5·80	5·60	6·15	7·45
	100·00	100·00	100·00	100·00	100·00	100·00	100·00
Total nitrogen in dry matter } × 6·25	13·12	12·03	13·34	12·91	11·59	12·25	14·22

But in the case of small samples such as these, results so got may be very misleading. If, however, we were to assume that all these samples were truly representative, and that the weight per acre of all was 20 tons, a comparison of No. 1 and No. 4 shows that, despite their apparent equality on the field, No. 1 would contain only three-quarters of the real food contained in the crop of No. 4, and that No. 3, despite the size of the turnips composing it, would contain only five-sixths the amount of food in No. 4.

The analysis of the dry matter shows of what the food consists.

By far the greatest amount of the food consists of sugar, and of substances very easily converted into sugar in the process of digestion. In the case of Nos. 1, 5, and 6, more than two-thirds of the dry matter of the bulbs consists of sugar. The ripest turnips are those which are richest in this respect.

These substances are carbohydrates. The woody fibre of turnips is comparatively small in amount, and it is, moreover, very easily digested, and for practical purposes it may be included along with the carbohydrates.

It will be seen that the combined carbohydrates and woody fibre are of nearly the same amount in all the samples. Generally speaking, a fodder is the better the less woody fibre it contains; but in the case of turnips an increase even of 5 per cent of woody fibre in the dry matter, as seen in samples No. 1 and No. 3, scarcely affects the value of the fodder. No. 7 is the only one that is comparatively deficient in the combined carbohydrates and woody fibre, but that is probably due to manurial treatment and not to the seed.

Next in importance to carbohydrates in turnips is albumen (for turnips are in the main a sugar-making crop), and in respect of the relative amounts of this constituent the greatest differences are observed in those samples.

It would doubtless be a matter of great importance to increase the proportion of albumen in turnips, and if by choice of seed or by manurial treatment the albumen could be increased, the feeding value of the turnip would be very considerably enhanced.

Albumen is only one of the nitrogenous substances in a turnip, and the one of the greatest importance. Next come amides, which are substances on the road to albumen—substances which would become albumen in time. The relative proportion of these two substances depends on a variety of circumstances—viz., anything which retards ripening. The relative abundance of albumen over that of amides indicates greater ripeness, and Nos. 1, 5, and 6, already referred to as having the greatest amount of sugary substances, are also distinguished by having most of their nitrogenous matter in the shape of albumen. They are evidently the ripest turnips. A consideration of the circumstances of their growth would no doubt show why it is that they are riper than the rest. It is easy to see why No. 1 should be riper than No. 2, for the seed was the same in both, and the chief difference between them is that the riper crop was grown on black land and the other on clay land, which would naturally be a colder, later subject.

The same seed was sown on East Pilmore, and there the crop was riper than No. 2, because (among other things probably) the red soil was warmer and better suited for ripening crops.

The large turnips grown at Berryhill had only about half their nitrogenous matter in the form of albumen, despite the fact that they were grown on a fine black soil, but that is explained by the size of the bulbs. The large amount of nitrogenous matter stored up in the bulbs had not time to ripen. It would have required a correspondingly large surface of leaves and plenty sunlight in the latter part of the season to convert the large store of amides into albumen. That is one of the disadvantages of growing large turnips.

Amides, when present in relatively small quantity in a turnip, are almost, if not quite, as valuable as albumen—they serve the purpose of albumen. But when present in large proportion, as in the case of these samples, they can only to a small extent serve the purpose of albumen. The great mass of the amides will be of no value as nitrogenous food, and so far as their feeding effect is concerned, they may be classified with the carbohydrates. I have, however, according to custom, reckoned them as albumen, so that the albuminoid and non-albuminoid nitrogenous matter might be the more easily compared.

No. 7, "the Kirkcaldy swede," is distinguished by having the largest amount of nitrogenous matter and a corresponding deficiency in carbohydrates. The very large amount of nitrogenous matter would have been a great merit had it been nearly all converted into albumen, but not much more than the half has been ripened into albumen. The clay soil does not altogether explain this, for the "Drummond swede," grown on similar soil at Unthank, was a much riper turnip. I suspect there must have been a much more liberal application of manure—especially of nitrogenous manure—in the case of the Kirkcaldy swede. An excess of nitrogenous manure, especially if very soluble, increases the amount of nitrogenous matter; but most of the increase is amides, for the plant has not time to ripen them into albumen. No. 1, though it had not the greatest amount of nitrogenous matter, had, nevertheless, the most albumen.

These are all high-class turnips, but it would be futile to judge their relative merits from a comparison of their analyses, seeing that the soils, the manuring, and other circumstances which affect both the quality and quantity of a crop, differed in all cases.

To this report I would add a few words regarding the analysis of turnips that may remove some misapprehension, and perhaps prevent disappointment.

The information that can be got from the analysis of turnips is more limited than is generally supposed. The analysis of a single bulb of any kind of turnip, unless it were fairly representative of the crop—and that is scarcely possible—is of no use whatever, because individual bulbs of the same crop can be got, growing even side by side, that differ enormously in their composition, and these differences may be due to a variety of what may be called accidental circumstances. Such bulbs are most likely derived from the seed of different parents, and though grown within the same square foot of soil, their roots have diverged and had a different experience; for there is no such thing as absolute uniformity of soil in an open field, and many circumstances of an organic and inorganic kind occur in the life of a plant to affect its growth and its eventual composition. It is only from a large sample consisting of thirty to forty bulbs carefully selected as representing the average growth of the field that valuable information can be got regarding the composition of a turnip crop.

If it is desired to make a comparison of different turnips grown from different kinds of seed so that their relative feeding quality may be gauged, it is essential that all the circumstances of their growth be as nearly as possible the same, so that they differ in nothing but the seed. They must be grown on the same field, on land as uniform as possible, sown on the same day under similar conditions of weather, and treated precisely in the same manner in every respect.

The same seed sown on two different farms or fields, or on different exposures, or at different times, or in circumstances differing in any material way whatsoever, will produce bulbs showing different analyses. The occurrence of a shower of rain during a sowing is sufficient to make a great difference not only in the quantity but also in the quality of the crop. It may make a difference of several days in the time of brairding and in the vigour of growth, which affects the whole history of the crop thereafter.

The success of an experiment in which two or more sets of turnips are to be compared lies in securing that they are circumstanced and treated exactly alike in every respect except in the one regarding which it is desired to institute a comparison. Even when all that is attainable in that way has been attained, there remains the question how far mere chemical analysis can be trusted as a guide to feeding quality in turnips. I believe that the general tendency is to exaggerate the importance of chemical analysis as a means of determining feeding quality. Doubtless chemical analysis can tell a great deal regarding feeding quality of turnips, for very reliable conclusions can be drawn from a knowledge of the amount of total solids, of true albumen, and of sugar contained in them, but there is something besides these in turnips that affects their feeding value, notably that set of conditions included under the term flavour—that which gives relish and induces stock to eat more. Recent experiments show that the progress of stock depends, in the first place, on the quantity of digestible solid matter they can be got to eat, and it is quite conceivable that two sets of turnips might have a very similar composition, as shown by analysis, and yet be differently relished by cattle, and owing to the different amounts consumed by them there might be a different effect as regards feeding progress. The best test is of course an actual feeding experiment; but that is a difficult test to make, and often still more difficult to correctly interpret. There is great need of feeding experiments with turnips, controlled by chemical analysis, to shed more light than we at present possess upon the relation between chemical analysis and feeding quality; but until we have been supplied with information of that kind we must not disregard chemical analysis, which, whatever its defects, is in the meantime the best guide that we have in determining the relative feeding value of turnips.

THE EFFECTS OF FOOD ON MILK AND BUTTER.

By JOHN SPEIR, Newton Farm, Glasgow.

THE results of the experiments of 1895-96[1] seemed to indicate that two foods—viz., decorticated cotton-seed-cake and vetches—had some tendency to increase the fat in the milk, while fresh young grass and grains had a tendency to decrease it. These experiments also plainly indicated that while many foods appeared to have a tendency to enrich or impoverish the milk, still neither effect seemed permanent, the inclination after a time being for the milk to return to more normal conditions. The experiments of the past year, while including a few foods not previously dealt with, were mainly intended to show whether or not other trials would corroborate the results already obtained and justify the conclusions drawn from them.

Cows used.

In order to reduce to a minimum all possible sources of error arising from individual peculiarities of the animals, the number of cows was increased to eight. This number was fixed under the idea that most cows might be relied on to give a fair quantity of milk for eight months, so that by substituting a recently calved cow at the beginning of each period for the cow longest in milk, it was hoped to get more uniform results than had been possible during the previous year when from four to six cows were used. These alterations considerably reduced the disturbing influences, but they did not entirely do away with them, as some cows milk longer than others, and recently-calved cows were not always available just when wanted. On the whole, however, the past year's results are more reliable than those of the year before.

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[1] 'Transactions,' 1896, Fifth Series, vol. viii.

Weighing the Milk.

As each cow's milk was brought into the dairy it was emptied into a special can. A spring-balance was hung in the dairy, the dial of which was so arranged that when this can was hung on empty the indicator stood at nothing. When, therefore, this can was hung on with any cow's milk in it, the weight shown on the dial was the net weight of the milk. This can and balance were used for all the weighings of milk, buttermilk, and cream.

The portion of each cow's milk which was daily passed through the separator was weighed on a small balance, sensitive enough to turn with a few drops of milk. The can used in this case was a small one for the purpose, which was balanced on the machine before weighing began. The separated milk was also weighed in this can. As in the previous year, the milk of each cow was weighed every afternoon, the double of this weight being assumed to be the total for the day.

Milk-yield.

The average weight of milk yielded by each cow during each week of any particular period cannot be taken as an absolutely reliable basis by which to gauge the milk-producing qualities of one food compared with another. Occasionally the recently added cow would yield three times as much milk as the one which had been rejected. On this account the addition of a heavy milking cow had often more effect on the total quantity of milk produced than the change of food. Before, therefore, anything approaching a reliable comparison can be made, only the milk yielded by such animals as were fed with both foods should be taken into account. When such is done a deduction should also be made of about 3·6 lb. per week for natural shrinkage owing to advanced lactation. When these corrections have been made, fairly comparable results may be obtained.

Sampling the Milk.

As soon as milking was finished, the milk of each cow was taken to the dairy, where it was emptied from one vessel to another three or four times, after which a sample, averaging about 1½ oz., was at once taken from the can by dipping a small measure into it. The samples were put in two glass-stoppered bottles, each holding fully ¼ gallon, the two being thus sufficient to hold the samples of a whole week. In each sample-bottle a small pinch of bichromate of potash was placed, which in the hottest of weather prevented souring, and also clogging of the tubes of the pipettes used for measuring the milk when testing. The samples gathered for a week usually amounted to about ½ gallon, and contained a uniform quantity of the milk yielded daily by each cow, and should therefore accurately represent the larger quantity of milk passed through the separator, the cream of which was ultimately churned. In the same manner a sample of the separated milk of each evening was taken and put into another bottle, which was also tested at the end of every week.

Estimation of Butter-fat.

In the estimation of the butter-fat in the milk, separated milk, and butter-milk, three samples were usually taken of the whole milk and two of the separated milk and butter-milk. By taking three samples I found I could get more quickly through the work and with more uniform results than by taking two, as in the latter case, if there was a difference of ·1 per cent or more, other two samples had to be taken, as there were no means of knowing which was correct. By taking three samples, however, two at least were on every occasion sure to be identical, so that there was never any occasion to make another test. Where there was a difference, the results of the two which were the same were always taken as being the correct determination. In measuring the milk for analytical purposes, and in taking the specific gravity for the calculation of the solids other than fats, the milk was always brought to 60° F. before doing either. As on the previous occasion, the determinations of fat in the milk were made with Dr Gerber's butyrometer.

Creaming.

As during 1895, the creaming was done by passing 3 lb. of each cow's milk every evening through a Humming-bird separator, kindly lent for the purpose of making this experiment by the Scottish branch of the Dairy Supply Co. The cream was kept as cold as possible till the end of the week, when it was brought into a warm place to lapper, churning being always done in thirty-six hours afterwards. The very best butter could not be made by this system, but it permitted of more accurate results being obtained than if more frequent churnings had been made with a smaller quantity of cream.

Churning.

The churning was done in a Sinton barrel-churn, the cream from 168 lb. of milk being used each time. During 1895 the attempt was made to churn all the creams at the one temperature or as near it as possible, but during the past year this idea was departed from, and each lot of cream was churned at such a temperature as experience indicated would cause the butter to come in from 30 to 40 minutes. No colouring matter was at any time added to the cream. All water added to the cream to rinse the dishes, or to the butter-milk in washing the butter, was weighed and noted. The butter-milk was drawn off as soon as the butter formed into grains the size of a pin-head, each lot of butter being twice washed in the churn. The butter was then transferred to a small centrifugal butter-drier, also lent for the purposes of this test by the Scottish branch of the Dairy Supply Co. The butter-drier was turned till water ceased to come from the butter. The butter-drier was found a great acquisition during the warm weather or with the soft butters, as it allowed the water to be extracted from the very softest butters without in any way spoiling the grain. After leaving the drier, scarcely any water was extracted from the butter while it was being made up. Each lot of butter was made up without salt, and was kept for a week at from 50° to 60° F. in a part of the house little affected by any external variations of temperature. As a portion of the butter was used daily at my own table, abundant opportunities were provided of noting the flavour and keeping qualities of each lot, a note being made at the end of each week of the chief characteristics.

Melting-point of the Butter.

During the previous year's experiments there was considerable irregularity in the melting-points of different samples of butter from the same churning, and at the time I was unable to say whether the irregularities arose from want of uniformity in the butter or faulty manipulation on my part. Greater practice in the work has, however, enabled me to get quite uniform results, so that the melting-points, instead of being considered only approximate, as was the case then,[1] may now be relied on as quite correct.

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[1] Transactions, 1896, Fifth Series, vol. viii. p. 273.

Estimating the Fat in the Butter.

The only part of the work which did not give such uniform results as was desirable, was the testing of the purity of the butter. Always three and occasionally four samples were taken in making a determination of the pure fat in the butter. The variations were, however, often greater than seemed to me consistent with accurate working. While some samples gave determinations each of which was almost identical with the other, there were others which varied considerably.

Losses.

The weight of the separated milk and cream scarcely ever equalled the weight of the milk before separation, there being generally a loss of from 1 to 3 per cent. When a certain weight of cream was put in the churn, the weight of butter, butter-milk, and washings rarely equalled the weight of cream and water added, there being usually a small loss here also. The greatest care was exercised in damping the churn and other vessels before use, and in saving every possible drop of milk; but it was only on rare occasions that everything could be accounted for, although of those doing this work some obtained much better results than others. A portion of the loss was probably accounted for by the inaccuracy of the spring-balance, as all machines of this kind, no matter how carefully regulated, are liable to error.

Persons engaged in the Work.

The weighing, separating, and churning of the cream were always done by one of my daughters, while the testing of the milk, separated milk, butter-milk, and butter was done by myself. The melting-points were determined either by myself or by my farm pupil, Mr William Wallace, while the byreman attended to the feeding. Both Mr Wallace and the byreman were much interested in the work, and faithfully carried out all the necessary details.

Foods.

The foods used were not weighed separately each time the animals were fed. The hay, straw, chaff, and roots used were weighed at intervals now and again, and an average taken, so that the quantities given are not actual but approximate, but may for all practical purposes be considered accurate. A *small portion* of the straw given as fodder was used as litter. This, however, was very small, and was constant during all the time that straw or green grass was used. The concentrated food used was calculated from the number of weighed sacks which were used out of those set aside at the beginning of each period, there being no doubt or difficulty in this case in knowing every pound which was used.

Changing Foods.

None of the changes from one kind of food to another were made rapidly or all at once. As a rule, for the first week only such quantities of the new food were given as the animals would take along with more or less of the old food, the one being gradually increased while the other was decreased. If the food was moderately palatable, the full quantity was usually taken by the end of the first week, and less-relished foods a day or two later.

Live-weights.

During 1895 and a portion of the past year's experiments the cows under test were weighed on the last Saturday morning of each period, and again on the following Monday morning at the same hour, the change in food being made on the Sunday. The average of the two weighings was taken as the actual weight. Where, however, the change of food was an extreme one, it was found that many of the animals were slightly lighter in weight on Monday than on Saturday. In order to reduce the risk of error from this cause, the animals were ultimately weighed on the last Friday and Saturday mornings of each period. After this change the variation in the weight of the animals was almost *nil*, and as the weigh-bridge turned easily with 1 lb., very accurate gains or losses were recorded.

The Health of the Animals.

Notwithstanding the very large quantities of food which were occasionally used, and the concentrated nature of it, the health of the animals remained particularly good. While using meat-meal the milk of one cow had to be rejected for a week, owing to an inflamed udder, but with that exception no cow showed any symptom of sickness likely in any way to interfere with the results of the experiment. None of the cows used for this experiment were put to the bull, and most of them were from four to six years old.

First and Second Years' Experiments.

As a rule, more details were carried out during the second year of the experiment than the first year. From period 9 the details were differently and more methodically arranged than they had previously been. In order, therefore, to preserve the continuity of the experiment, and to afford comparison, sheets have been made up for the first portion of the experiment similar to those which were adopted for the latter part. For the former period some of the data are awanting.

FOODS USED.

PERIOD 8.—*Linseed-cake.*

	Digestible materials in the foods per 100 lb.			Weight in lb. of the foods used.	Amount in lb. of digestible constituents in the ration.		
	Albuminoids.	Carbohydrates.	Fats.		Albuminoids.	Carbohydrates.	Fats.
Italian	7·1	41	1·4	12	·85	4·9	·16
Chaff	1·4	33	·4	10	·14	3·3	·04
Linseed-cake	24·5	29	12	7	1·71	2	·84
					2·70	10·2	1·04

PERIOD 9.—*Decorticated Cotton-seed-cake.*

Italian	7·1	41	1·4	12	·85	4·9	·16
Bran	11	50	2·9	1	·11	·5	·03
Treacle	2·8	4·1	...	1	·02	...	...
Potatoes	2·1	21	·2	14	·29	2·9	·03
Wheat-chaff	1·4	33	·4	7½	·10	2·4	·03
Decorticated cotton-cake .	37	18	13	7	2·59	1·3	·91
					3·96	12	1·16

PERIOD 10.—*Grains and Bran.*

Grains	15	34	6·4	5	·75	1·7	·32
Bran	11	50	2·9	4	·44	2	·11
Treacle	2·8	4·1	...	1½	·04	·06	...
Potatoes	2·1	21	·2	14	·29	2·90	·03
Italian hay	7·1	41	1·4	8	·56	3·28	·11
Wheat-chaff	1·4	33	·4	5	·07	1·65	·01
					2·15	11·59	·58

PERIOD 11.—*Mixture of Foods used on the Farm at this date.*

Peas	20·1	53	1·4	2·2	·44	1·16	·03
Maize	8	68·5	4	2·2	·17	1·50	·08
Beans	22	50	1·4	1·1	·24	·55	·01
Cotton-seed	14·5	13·5	22·8	1·1	·16	·15	·25
Paisley-meal	14·5	56	5·4	1·8	·26	1	·09
Bran	11	47	2·9	1	·11	·47	·03
Treacle	2·8	4·1	...	1½	·04	·06	...
Draff	3·9	10	1·3	14	·54	1·40	·18
Potatoes	2·1	22	·2	10	·21	2·20	·02
Italian hay	7	41	1·4	6	·42	2·46	·08
Oat-straw and chaff . .	1·4	40	·6	10	·14	4	·06
					2·73	14·95	

PERIOD 12.—*Pasture.*

PERIOD 13.—*Decorticated Cotton-seed-cake.*

	Digestible materials in the foods per 100 lb.			Weight in lb. of the foods used.	Amount in lb. of digestible constituents in the ration.		
	Albuminoids.	Carbohydrates.	Fats.		Albuminoids.	Carbohydrates.	Fats.
Italian ryegrass, green . .	2	12	·3	75	1·5	9	·18
Decorticated cotton-cake .	37	18	13	8	2·96	1·44	1·04
Wheat-chaff	1·4	33	·4	10	·14	3·30	·04
					4·60	13·74	1·26

PERIOD 14.—*Liebig's Meat-meal and Decorticated Cotton-cake with Grass.*

Meat-meal	67·5	·5	12·8	5¾	3·88	·03	·73
Decorticated cotton-cake .	37	18	13	2½	·92	·45	·32
Italian, green	2	12	·3	75	1·50	9	·18
Wheat-chaff	1·4	33	·4	10	·14	3·30	·04
					6·44	12·78	1·27

PERIOD 15.—*Cummins and Green Italian Ryegrass.*

Cummins	19	50	1	15	2·8	7·5	·75
Italian, green	2	12	·3	75	1·5	9	·18
Wheat-chaff	1·4	33	·4	8	·11	2·6	·03
					4·41	19·1	·96

PERIOD 16.—*A Sugar-meal and Italian Ryegrass.*

Sugar-meal	19	44	3	15	1·05	10·50	·22
Italian, green	2	12	·3	50	1	6	·15
Oat-straw	1·4	40	·7	5	·07	2	·03
Wheat-chaff	1·4	33	·4	10	·14	3·30	·04
					2·26	21·80	·44

PERIOD 17.—*Paisley-meal.*

Hay (lea)	4·5	36	·5	10	·45	3·60	·05
Swedes	1·3	10·6	·1	25	·32	2·65	·02
Oat-straw	1·4	40	·7	5	·07	2	·03
Wheat-chaff	1·4	33	·4	10	·14	3·30	·04
Paisley-meal	14·5	56	5·4	10	1·45	5·60	·54

PERIOD 18.—*Indian grey Pea-meal.*

Hay (lea)	4·5	36	·5	10	·45	3·60	·05
Swedes	1·3	10·6	·1	25	·32	2·65	·02
Oat-straw	1·4	40	·7	5	·07	2	·03
Wheat-chaff	1·4	33	·4	10	·14	3·30	·04
Grey peas	20·1	53	1·4	9	1·80	4·77	·12
					2·78	16·32	·26

Period 19.—*A Sugar-meal and Indian grey Pea-meal.*

	Digestible materials in the foods per 100 lb.			Weight in lb. of the foods used.	Amount in lb. of digestible constituents in the ration.		
	Albuminoids.	Carbohydrates.	Fats.		Albuminoids.	Carbohydrates.	Fats.
Italian hay (2d quality) .	5	38	1	10	·50	3·80	·10
Swedes	1·3	10·6	·1	25	·32	2·65	·02
Oat-straw	1·4	40	·7	5	·07	2	·03
Wheat-chaff	1·4	33	·4	10	·14	3·30	·04
Grey peas	20·1	53	1·4	7	1·40	3·71	·09
A sugar-meal . . .	7	70	1·5	4	·28	2·80	·06
					2·71	18·26	·34

Period 20.—*Bean-meal.*

Italian hay (2d quality) .	5	38	1	10	·5	3·80	·10
Mangels	1·1	10	·1	25	·27	2·50	·02
Oat-straw	1·4	40	·7	5	·07	2	·03
Wheat-chaff	1·4	33	·4	10	·14	3·30	·04
Bean-meal	22	50	1·4	9	1·98	4·50	·12
					2·96	16·10	·31

Period 21.—*Fresh Grains (Wet).*

Oat-straw	1·4	40	·7	10	·14	4	·07
Italian hay	5	36	·8	2	·10	·72	·01
Treacle	2·8	4·1	...	2	·05	·08	...
Mangels	1·1	9·1	·1	20	·22	1·82	·02
Wet brewers' grains . .	3·9	10	1·3	50	1·95	5	·65
					2·46	11·62	·75

PERIOD 1.

PASTURE.

Began May 26, *and ended June* 15, 1895.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	264·5	268·	275·5	...	...
Per cent of fat in milk	3·6	3·52	3·55	...	...
" of solids not fats	...	...	9	...	...
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	...	...	3·77	...	...
Butter-milk	...	...	...	...	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Analysis of the butter and by-products—					
Per cent of fat in butter	...	...	...	...	...
" " butter-milk	...	...	1·25	...	...
" " skim-milk	...	...	...	...	...
Fat in lb. found in the products of 100 lb. of milk—					
Butter	...	...	3·204	...	...
Butter-milk	...	...	·125	...	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Churning—					
Temperature of cream when churning began	...	...	57°	...	...
" " ended	...	...	...	...	...
Time in minutes occupied in churning	...	...	...	...	...
Per cent of fat in the milk recovered in the butter	...	...	90·2	...	...
Melting-point of the butter in degrees F.	...	...	90·1°	...	...
Characteristics of the butter	...	...	good	...	...

PERIOD 2.

GREEN VETCHES.

Began June 16, *and ended July* 13, 1895.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week . .	221·2	174	149·5	129·5	...
Per cent of fat in milk . . .	4·2	3·86	3·89	3·96	...
" of solids not fats . .	...	9·11	8·65	9·42	...
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4	3·900	4·500	4·234	...
Butter-milk	...	...	...	...	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Analysis of butter and by-products—					
Per cent of fat in butter	...	...	...	...	...
" " butter-milk . .	...	...	·6	·4	...
" " skim-milk . .	...	...	...	...	...
Fat in lb. found in the products of 100 lb. of milk—					
Butter	...	...	*3·825	*3·599	...
Butter-milk	...	...	·060	·040	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Churning—					
Temperature of cream—					
When churning began	...	...	...	...	...
" ended	...	...	...	...	...
Time in minutes occupied in churning	...	...	...	...	...
Per cent of fat in the milk recovered in the butter	...	...	98·3	90·9	...
Melting-point of the butter in degrees F.	90°	90°	90°	92°	...
Characteristics of the butter . .	good	good	good	good	...

* Butter-fat estimated.

PERIOD 3.

Green Vetches and Dried Grains.

Began July 14, *and ended August* 10, 1895.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	172·2	193·7	170·5	161	...
Per cent of fat in milk	3·38	3·22	3·51	3·70	...
" of solids not fats	8·84	9·12	9·59	9·11	..
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	3·750	3·406	3·625	3·687	...
Butter-milk	...	...	...	...	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Analysis of the butter and by-products—					
Per cent of fat in butter	...	...	...	...	...
" " butter-milk	·37	·75	·65	·78	...
" " skim-milk	...	...	...	...	...
Fat in lb. found in the products of 100 lb. of milk—					
Butter	...	...	*3·081	*3·134	...
Butter-milk	...	...	·065	·078	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Churning—					
Temperature of cream—					
When churning began	...	...	...	...	...
" ended	...	...	...	...	...
Time in minutes occupied in churning	...	...	...	...	...
Per cent of fat in the milk recovered in the butter	94·3	89·9	87·7	84·7	...
Melting-point of the butter in degrees F.	...	...	91°	93°	...
Characteristics of the butter	Soft, open in texture, and spongy				

* Butter-fat estimated.

PERIOD 4.

INDIAN MEAL AND BARLEY-MEAL.

Began August 11, *and ended Sept.* 7, 1895.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	154·7	135·2	135	125·7	...
Per cent of fat in milk	3·60	3·65	3·66	3·74	...
" of solids not fats	8·98	9·32	9	9·25	...
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	3·532	3·672	4·086	3·906	...
Butter-milk	...	...	...	...	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Analysis of butter and by-products—					
Per cent of fat in butter	...	...	...	...	...
" " butter-milk	1·35	1·4	1·5	1·2	...
" " skim-milk	...	...	...	...	...
Fat in lb. found in the products of 100 lb. of milk—					
Butter	...	...	*3·473	*3·32	...
Butter-milk	..	...	·15	·12	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Churning—					
Temperature of cream—					
When churning began	...	...	...	...	...
" ended	...	...	...	...	...
Time in minutes occupied in churning	...	...	...	...	...
Per cent of fat in the milk recovered in the butter	83·4	85·5	94·8	88·7	...
Melting-point of the butter in degrees F.	91°	91·5°	92°	92·5°	...
Characteristics of the butter	Fairly	good			

* Butter-fat estimated.

PERIOD 5.

BEAN-MEAL.

Began Sept. 8, *and ended Oct.* 5, 1895.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week . .	140·1	122·8	111·8	99·2	...
Per cent of fat in milk . . .	4·4	4·33	4·09	3·95	...
" of solids not fats . .	9·73	9·63	9·14	8·92	...
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·734	4·164	4·320	4·297	...
Butter-milk	...	...	...	...	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Analysis of butter and by-products—					
Per cent of fat in butter . . .	...	...	...	...	...
" " butter-milk . .	·25	·25	·55	·2	...
" " skim-milk . .	...	...	·3	·25	...
Fat in lb. found in the products of 100 lb. of milk—					
Butter	...	...	*3·672	*3·625	...
Butter-milk	...	...	·060	·030	...
Skim-milk	...	...	·255	·200	...
Difference	...	...	·103	·095	...
Churning—					
Temperature of cream—					
When churning began . . .	...	...	...	...	...
" ended . . .	...	...	...	...	...
Time in minutes occupied in churning	...	...	...	...	...
Per cent of fat in the milk recovered in the butter	91·4	82	89·8	92·4	...
Melting-point of the butter in degrees F.	92°	90°	90°	90·5°	...
Characteristics of the butter . .	Flavour,	colour,	and text	ure good	

* Butter-fat estimated.

PERIOD 6.

PAISLEY-MEAL.

Began Oct. 6, *and ended Nov.* 9, 1895.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week .	109·4	102	93	84·8	80
Per cent of fat in milk . . .	4·11	4·43	4·38	4·26	4·05
" of solids not fats . .	9·01	8·85	9·25	9·30	9·06
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·057	4·375	4·519	4·518	4·445
Butter-milk	...	...	...	...	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Analysis of butter and by-products—					
Per cent of fat in butter . .	...	...	...	81·25	82·5
" " butter-milk .	1·6	·8	·9	2·5	1·1
" " skim-milk .	...	...	...	·25	·25
Fat in lb. found in the products of 100 lb. of milk—					
Butter	...	...	...	3·671	3·667
Butter-milk	...	...	...	·425	·187
Skim-milk	...	...	...	·196	·196
Difference	...	...	...	+ ·032	...
Churning—					
Temperature of cream—					
When churning began . .	...	...	...	...	...
" ended . .	...	...	...	...	...
Time in minutes occupied in churning	...	...	...	...	...
Per cent of fat in the milk recovered in the butter	83·8	83·9	87·7	86·2	90·5
Melting-point of the butter in degrees F.	91°	89°	88°	87°	87°
Characteristics of the butter . .	Colour bad, texture open, keeping qualities low				

PERIOD 7.

Bruised Oats.

Began Nov. 10, *and ended Dec.* 14, 1895.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	...	...	...	...	...
Per cent of fat in milk	4·24	4·49	4·42	4·27	4·26
" of solids not fats	9·04	9·22	8·91	8·88	...
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·717	4·916	4·638	4·890	4·650
Butter-milk	...	...	...	...	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Analysis of butter and by-products—					
Per cent of fat in butter	89	89	85	84·7	83
" " butter-milk	...	...	...	·2	·35
" " skim-milk	...	...	...	·2	·3
Fat in lb. found in the products of 100 lb. of milk—					
Butter	...	...	4·035	4·142	3·859
Butter-milk	...	...	...	030	·052
Skim-milk	...	...	...	·160	·240
Difference	...	...	...	+·057	·109
Churning—					
Temperature of cream—					
When churning began	...	...	...	...	...
" ended	...	...	...	...	...
Time in minutes occupied in churning	...	...	...	...	...
Per cent of fat in the milk recovered in the butter	98·7	97·4	91·3	96·8	90·6
Melting-point of the butter in degrees F.	90·5°	92·25°	92°	91°	90°
Characteristics of the butter	Colour,	flavour,	and text	ure good	

PERIOD 8.

LINSEED-CAKE.

Began Dec. 15, 1895, *and ended Jan.* 18, 1896.

Dry matter in the food	27 lb.
Dry matter per 1000 lb. live-weight	lb.
Albuminoid ratio	1 to 4·7
Average live-weight of the cows at the beginning of this period .	885·7 lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week .	...	...	...	...	...
Per cent of fat in milk . . .	...	4·85	4·23	4·08	4·02
" of solids not fats . .	...	9·61	9·36	8·98	9·52
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	5·100	5·720	5·020	4·670	4·500
Butter-milk	...	...	...	...	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Analysis of butter and by-products—					
Per cent of fat in butter . .	80·2	77·5	78	81·25	84
" " butter-milk .	1·65	...	1·5	1·1	·75
" " skim-milk .	...	...	...	...	...
Fat in lb. found in the products of 100 lb. of milk—					
Butter	...	...	...	...	...
Butter-milk	...	...	...	...	...
Skim-milk	...	...	...	...	...
Difference	...	..	...	...	...
Churning—					
Temperature of cream—					
When churning began . .	...	...	...	...	...
" ended . .	...	...	...	...	...
Time in minutes occupied in churning	...	...	...	...	...
Per cent of fat in the milk recovered in the butter	...	91·4	92·5	92·4	94
Melting-point of the butter in degrees F.	...	95°	97°	95°	95°
Characteristics of the butter . .	Soft, open, and of bad keeping quality				

PERIOD 9.

DECORTICATED COTTON-SEED-CAKE.

Began Jan. 19, *and ended Feb.* 23, 1896.

Dry matter in the food	27 lb.
Dry matter per 1000 lb. live-weight	lb.
Albuminoid ratio	1 to 3·7
Average live-weight of the cows at the beginning of this period .	889·3 lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week .	...	...	...	...	...
Per cent of fat in milk . . .	4·6	5·2	4·85	5	4·75
" of solids not fats . .	9·37	9·43	9·48	9·52	9·33
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·700	5·730	5·660	5·420	5·100
Butter-milk	...	...	...	...	...
Skim-milk	...	...	...	...	...
Difference	...	...	...	...	...
Analysis of butter and by-products—					
Per cent of fat in butter . .	...	...	...	84	85
" " butter-milk .	·8	·8	·05	·17	·05
" " skim-milk .	...	...	...	·25	·15
Fat in lb. found in the products of 100 lb. of milk—					
Butter	...	...	...	4·55	4·33
Butter-milk	...	...	...	·02	...
Skim-milk	...	...	...	·21	·13
Difference	...	...	...	·22	·29
Churning—					
Temperature of cream—					
When churning began . .	...	...	...	...	...
" ended . .	...	...	...	...	...
Time in minutes occupied in churning	...	...	...	...	...
Per cent of fat in the milk recovered in the butter	90·4	93·6	95·9	91·04	91·26
Melting-point of the butter in degrees F.	98°	98°	105°	106°	103°
Characteristics of the butter . .	Flavour,	colour,	and text	ure good	

PERIOD 10.

GRAINS, BRAN, TREACLE, AND POTATOES.

Began Feb. 24, *and ended March* 28, 1896.

Dry matter in the food	21·3 lb.
Dry matter per 1000 lb. live-weight	22·74 lb.
Albuminoid ratio	1 to 6
Average live-weight of the cows at the beginning of this period	937 lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week .	165·2	153·5	153·3	157·7	162·4
Per cent of fat in milk . .	3·9	3·65	4	3·8	3·75
" of solids not fats .	8·89	9·23	9 04	9·39	9·50
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·5	3·748	4·065	4·064	4·427
Butter-milk	16·9	22·5	15·8	14	*77·43
Skim-milk	...	...	...	81·5	18
Difference	...	...	...	·436	·143
Analysis of butter and by-products—					
Per cent of fat in butter . .	83	85	...	82·5	80·6
" " butter-milk .	·7	·7	·2	1	·22
" " skim-milk .	·2	·2	·2	·2	·2
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·7350	3·1858	...	3·353	3·568
Butter-milk	·1183	·1575	...	·140	·170
Skim-milk	...	...	...	·163	·036
Difference	...	...	...	·144	+ ·024
Churning—					
Temperature of cream—					
When churning began . .	57·5°	57°	57°	57°	60°
" ended . .	58°	57°	57°	57°	64°
Time in minutes occupied in churning	...	35	35	35	90
Per cent of fat in the milk recovered in the butter . .	95·7	87·3	...	88·2	97
Melting-point of the butter in degrees F.	91°	89°	89°	89°	90°
Characteristics of the butter .	Quality second class				

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* The most of this churning was whole milk, the separator having gone out of repair.

PERIOD 11.

MIXTURE OF FOODS IN USE ON THE FARM AT THIS DATE.

Began March 29, *and ended May* 2, 1896.

Dry matter in the food	24·5 lb.
Dry matter per 1000 lb. live-weight	24·5 lb.
Albuminoid ratio	1 to 6·24
Average live-weight of the cows at the beginning of this period .	886 lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	172·6	171·6	177·5	193·8	186·4
Per cent of fat in milk . .	3·85	3·5	3·55	3·35	3·6
" of solids not fats .	9·41	9·06	9·06	9·29	9·35
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·2320	4·0920	4·0100	3·3000	4·200
Butter-milk	21·2	20·63	22·64	*56	22·86
Skim-milk	74·5	75·8	72·8	40·5	73
Difference	·064	+ ·422	·55	·55	+ ·06
Analysis of butter and by-products—					
Per cent of fat in butter .	83·6	†79	82·8	82	80·1
" " butter-milk	·3	·2	·2	·53	·2
" " skim-milk	·2	·2	·2	·2	·2
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·538	3·233	3·320	2·970	3·367
Butter-milk	·063	·041	·045	·296	·045
Skim-milk	·150	·152	·146	·081	·146
Difference	·099	·074	·061	·003	·042
Churning—					
Temperature of cream—					
When churning began .	57½°	58°	57°	63° 60° †	56°
" ended .	59°	55°	57°	63° 64°	59°
Time in minutes occupied in churning	35	40	75	45 100	90
Per cent of fat in the milk recovered in the butter .	91·24	92·37	93·52	88·66	93·5
Melting-point of the butter in degrees F.	89°	91°	88°	87·5°	89°
Characteristics of the butter .	Soft and	spongy			

* Separator out of repair. Half of milk churned whole.

† Cream churned too cold; butter only washed once, and butter-milk badly extracted.

PERIOD 12.

Pasture.

Began May 3, *and ended June* 6, 1896.

Dry matter in the food	lb.
Dry matter per 1000 lb. live-weight	lb.
Albuminoid ratio	
Average live-weight of the cows at the beginning of this period .	874½ lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	203·4	230	231	227·8	221·75
Per cent of fat in milk .	3·77	3·5	3·47	3·6	3·6
" of solids not fats .	...	9·33	9·32	9·30	9·22
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·27	3·65	3·625	3·812	3·720
Butter-milk	8·6	3·5	18·023	19·217	20·834
Skim-milk	86·84	92·58	78·2	76·808	74·576
Difference	·29	·27	·152	·163	·870
Analysis of butter and by-products—					
Per cent of fat in butter .	83·4	85·9	86·2	82·8	85
" " butter-milk	·25	·9	·35	·96	·67
" " skim-milk	·15	·2	·2	·2	·2
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·5631	3·1454	3·1247	3·1582	3·1620
Butter-milk	·0225	·0315	·0630	·1845	·1396
Skim-milk	·1302	·1851	·1564	·1536	·1491
Difference	·0542	·1380	·1259	·1037	·1493
Churning—					
Temperature of cream—					
When churning began .	57°	56·5°	57°	56°	57°
" ended .	58°	58·5°	58°	59·5°	59·5°
Time in minutes occupied in churning	35	33	56	45	65
Per cent of fat in the milk recovered in the butter .	94·5	89·8	90	87·7	87·8
Melting-point of the butter in degrees F.	89°	88·5°	90°	90°	90°
Characteristics of the butter .	Good colour, flavour, and firm				

PERIOD 13.

Decorticated Cotton-Seed-cake and green Italian Ryegrass.

Began June 7, *and ended July* 12, 1896.

Dry matter in the food	30 lb.
Dry matter per 1000 lb. live-weight	33·42 lb.
Albuminoid ratio	1 to 3·6
Average live-weight of the cows at the beginning of this period .	897⅝ lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	212·1	181·1	186	163·4	166·5
Per cent of fat in milk .	4	4	4·25	4	3·7
" of solids not fats .	9·51	9·70	9·68	9·32	9·14
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·0458	4·4930	4·8405	4·4057	3·7660
Butter-milk	19·04	20·88	21·49	17·56	14·980
Skim-milk	76·23	74·24	73·75	77·83	81·25
Difference	·6842	·387	·0805	·1043	·004
Analysis of butter and by-products—					
Per cent of fat in butter .	89	83·5	83·4	83·84	85·3
" " butter-milk	·8	·27	...	·3	·25
" " skim-milk	·2	·2	·2	·2	·2
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·6007	3·7516	4·0370	3·6937	3·2124
Butter-milk	·1523	·0563	...	·0567	·0360
Skim-milk	·1524	·1484	·1470	·1556	·1625
Difference	·0946	·0437	...	·1991	·2891
Churning—					
Temperature of cream—					
When churning began .	59°	58°	62°	65°	65°
" ended .	63°	63°	65°	68°	80°
Time in minutes occupied in churning	75	85	100	60	40
Per cent of fat in the milk recovered in the butter .	90	93·8	95	90	87
Melting-point of the butter in degrees F.	93°	97·5°	100°	103°	100°
Characteristics of the butter .	Colour and flavour good; very firm				

PERIOD 14.

MEAT-MEAL, DECORTICATED COTTON-SEED-CAKE, AND GREEN ITALIAN RYEGRASS.

Began July 12, *and ended Aug.* 15, 1896.

Dry matter in the food	30·4 lb.
Dry matter per 1000 lb. live-weight	31·27 lb.
Albuminoid ratio	1 to 2·4
Average live-weight of the cows at the beginning of this period .	972⅛ lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	176·4	187·2	166·4	160·7	148·6
Per cent of fat in milk . .	3·97	4·1	4·25	4·1	4·15
" of solids not fats .	9·16	9·25	9·48	9·65	9·73
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·3000	4·3000	4·4300	3·9160	4·5000
Butter-milk	18·5	20·4	19·6	17	16·7
Skim-milk	75·6	73·3	74	77	79
Difference	1·6	2	1·9684	2·084	+ ·2
Analysis of butter and by-products—					
Per cent of fat in butter .	84·08	83·8	83·3	81	83·3
" " butter-milk	·25	·3	·4	·9	·8
" " skim-milk	·2	·25	·2	·25	·3
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·6154	3·603	3·6915	3·172	3·7485
Butter-milk	·0550	·051	·0784	·153	·1336
Skim-milk	·1510	·219	·1480	·192	·237
Difference	·1486	·227	·3321	·583	·0309
Churning—					
Temperature of cream—					
When churning began .	64°	67°	66°	64°	65°
" ended .	70°	66½°	66°	66°	66°
Time in minutes occupied in churning	65	50	50	35	40
Per cent of fat in the milk recovered in the butter . .	93·6	87·9	86·8	79·3	90·3
Melting-point of the butter in degrees F.	100°	97°	98°	95°	95°
Characteristics of the butter .	Soft and greasy, but no very perceptible pronounced flavour				

PERIOD 15.

CUMMINS AND GREEN ITALIAN RYEGRASS.

Began Aug. 16, *and ended Sept.* 19, 1896.

Dry matter in the food	34·5 lb.
Dry matter per 1000 lb. live-weight	36 lb.
Albuminoid ratio	1 to 4·8
Average live-weight of the cows at the beginning of this period .	958 lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	142·75	154·9	129·3	115·4	98·4
Per cent of fat in milk . .	4·3	4	3·7	4	4
" of solids not fats .	9·50	9·43	9·75	9·18	9·30
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·710	4·233	4·0513	3·5714	4·194
Butter-milk	17·3	16·2	18	20·8	20·3
Skim-milk	77·7	78·8	77·4	75·6	75·7
Difference	·29	·767	·5487	·0286	+ ·194
Analysis of butter and by-products—					
Per cent of fat in butter .	84·1	83·6	81·25	84	84·15
" " butter-milk	·8	·7	1·35	2·9	·65
" " skim-milk	·2	·25	·2	·25	·25
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·9611	3·5388	3·2896	3	3·5292
Butter-milk	·1384	·1134	·2430	·6032	·1319
Skim-milk	·1554	·1970	·1548	·1890	·1892
Difference	·0451	·1508	·0126	·2078	·1495
Churning—					
Temperature of cream—					
When churning began .	61°	63°	62·5°	64°	61·5°
" ended .	65°	63°	63·5°	64°	62°
Time in minutes occupied in churning	60	40	35	30	30
Per cent of fat in the milk recovered in the butter . .	91·6	88·5	89·9	75	88·2
Melting-point of the butter in degrees F.	97°	95°	92°	91°	90°
Characteristics of the butter .	Texture fairly firm and flavour moderate				

PERIOD 16.

B. SUGAR-MEAL AND GREEN ITALIAN RYEGRASS.

Began Sept. 20, and ended Oct. 24, 1896.

Dry matter in the food	35·5 lb.
Dry matter per 1000 lb. live-weight	33·61 lb.
Albuminoid ratio	
Average live-weight of the cows at the beginning of this period .	1056⅛ lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	127·7	124·2	108·2	119·7	111
Per cent of fat in milk . .	4·1	3·8	3·7	3·7	3·5
" of solids not fats .	9·38	9·52	8·8	9·37	9·33
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·2271	4	4·0271	3·8964	3·683
Butter-milk	20·9	20	21·4	25·9	22·8
Skim-milk	74·1	73·8	73·5	68	72
Difference	·7729	2·2	1·0729	2·2036	1·517
Analysis of butter and by-products—					
Per cent of fat in butter .	84·5	83·3	82	81·4	82
" " butter-milk	·35	1	·45	·8	·5
" " skim-milk	·3	·3	·25	·4	·4
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·5719	3·3320	3·3022	3·1716	3·0200
Butter-milk	·0131	·2000	·0964	·2072	·114
Skim-milk	·2223	·2210	·1837	·2720	·288
Difference	·2327	·0470	·1175	·0492	·078
Churning—					
Temperature of cream—					
When churning began .	61·5°	61·5°	61·5°	61°	60°
" ended .	61·5°	61°	61°	62°	59°
Time in minutes occupied in churning	45	40	30	35	48
Per cent of fat in the milk recovered in the butter . .	87·1	87·7	89·2	85·7	86·3
Melting-point of the butter in degrees F.	90°	90°	89°	87°	87°
Characteristics of the butter .	Texture soft, flavour poor, keeping qualities very bad				

PERIOD 17.

PAISLEY-MEAL.

Began Oct. 25, *and ended Nov.* 14, 1896.

Dry matter in the food	33 lb.
Dry matter per 1000 lb. live-weight	32·41 lb.
Albuminoid ratio	1 to 7·7
Average live-weight of the cows at the beginning of this period	1018⅜ lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	117·1	118·6	118·5	...	...
Per cent of fat in milk	3·7	3·8	3·7	...	...
" of solids not fats	9·05	9·13	9·11	...	...
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4	4·4423	4·0734	...	...
Butter-milk	*94	15·6	17·26	...	...
Skim-milk	...	75·1	75·5	...	...
Difference	2	4·7577	3·2666	...	...
Analysis of butter and by-products—					
Per cent of fat in butter	78	78·8	80·3	...	...
" " butter-milk	·6	·5	·6	...	...
" " skim-milk	...	·2	·25	...	...
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·120	3·6005	3·2709	...	...
Butter-milk	·564	·078	·1135	...	...
Skim-milk	...	·15	·1837	...	...
Difference	·016	·0285	·1317	...	...
Churning—					
Temperature of cream—					
When churning began	63°	58·5°	58°	...	...
" ended	61·5°	58·5°	58·5°	...	...
Time in minutes occupied in churning	50	38	30	...	...
Per cent of fat in the milk recovered in the butter	84·3	92·1	88·4	...	...
Melting-point of the butter in degrees F.	90°	90°	88°	...	...
Characteristics of the butter	Texture soft, and flavour rancid shortly after manufacture				

* Whole milk.

PERIOD 18.

INDIAN GREY PEA-MEAL.

Began Nov. 15, *and ended Dec.* 19, 1896.

Dry matter in the food	32·15 lb.
Dry matter per 1000 lb. live-weight	32·38 lb.
Albuminoid ratio	1 to 6·1
Average live-weight of the cows at the beginning of this period .	993¼ lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	122	127·1	130·7	128·6	131·2
Per cent of fat in milk .	3·7	3·7	3·6	3·6	3·8
" of solids not fats .	9·35	9·24	9·25	9·35	9·35
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	4·0177	4·0178	4·0550	3·9893	3·9434
Butter-milk	19	17	19	16·8	17
Skim-milk	74	75·9	74·4	76·4	77
Difference	2·9823	3·0822	2·5450	2·8107	2·0566
Analysis of butter and by-products—					
Per cent of fat in butter .	83·5	82·5	84	84	84
" " butter-milk	·7	·25	·2	·2	·6
" " skim-milk	·25	·25	·2	·2	·3
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·3547	3·3147	3·4062	3·3510	3·3124
Butter-milk	·1330	·0425	·0380	·0336	·1020
Skim-milk	·1850	·1895	·1488	·1528	·2310
Difference	·0273	·1533	·0070	·0654	·1546
Churning—					
Temperature of cream—					
When churning began .	59°	58°	58°	57°	58°
" ended .	...	57°	57°	...	61°
Time in minutes occupied in churning	25	45	50	80	60
Per cent of fat in the milk recovered in the butter . .	90·6	89·6	94·6	93·1	85
Melting-point of the butter in degrees F.	...	89°	88·5°	88·5°	88·5°
Characteristics of the butter .	Firm and good flavour				

PERIOD 19.

INDIAN GREY PEA-MEAL AND A SUGAR-MEAL.

Began Dec. 20, 1896, *and ended Jan.* 23, 1897.

Dry matter in the food	35 lb.
Dry matter per 1000 lb. live-weight	35·91 lb.
Albuminoid ratio	1 to 7
Average live-weight of the cows at the beginning of this period	974·6 lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	154·25	143·47	147·75	146·5	139·25
Per cent of fat in milk	3·7	3·8	3·7	3·6	3·7
" of solids not fats	9·38	9·39	9·56	9·35	9·35
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	3·9188	4·1190	4·1666	3·9062	3·8300
Butter-milk	14·2	12	13·7	14·88	17
Skim-milk	78·5	79·5	78	79·43	77·4
Difference	3·3812	4·3810	4·1334	1·7838	1·7700
Analysis of butter and by-products—					
Per cent of fat in butter	83	83	84·1	84·1	83·5
" " butter-milk	·35	·2	·35	·8	·7
" " skim-milk	·25	·25	·25	·2	·2
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·2526	3·4187	3·4762	3·2951	3·1980
Butter-milk	·0497	·0247	·0479	·1192	·1190
Skim-milk	·1962	·1987	·1950	·1588	·1548
Difference	·2015	·1578	·0809	·0268	·2282
Churning—					
Temperature of cream—					
When churning began	58·5°	60°	62°	64°	64°
" ended	58°	62°	61°	61°	62°
Time in minutes occupied in churning	75	65	40	30	20
Per cent of fat in the milk recovered in the butter	88	89·9	91·2	91·5	86·5
Melting-point of the butter in degrees F.	88·5°	88°	88°	88°	88°
Characteristics of the butter	Colour fair, texture firm, flavour third class				

PERIOD 20.

BEAN-MEAL.

Began Jan. 24, *and ended Feb.* 27, 1897.

Dry matter in the food	33¼ lb.
Dry matter per 1000 lb. live-weight	34·3 lb.
Albuminoid ratio	1 to 5·7
Average live-weight of the cows at the beginning of this period .	968⅜ lb.

	1st week.	2d week.	3d week.	4th week.	5th week.
Weight and analysis of milk—					
Milk in lb. per cow per week	167·25	154	147	140·4	130·2
Per cent of fat in milk .	3·7	3·7	3·7	3·8	3·75
" of solids not fats .	9·37	9·63	9·37	9·37	9·25
Weight in lb. of butter and by-products of 100 lb. of milk—					
Butter	3·7200	3·6642	*3·1715	3·9993	3·5714
Butter-milk	17·7	17	16·6	18	17
Skim-milk	78·5	77·4	73·6	78	78
Difference	·08	1·9358	6·6285	·0007	1·4286
Analysis of butter and by-products—					
Per cent of fat in butter .	84	84·5	87·4	84·5	87
" " butter-milk	1	·35	2·2	·2	·3
" " skim-milk	·2	·2	·2	·2	·25
Fat in lb. found in the products of 100 lb. of milk—					
Butter	3·1248	3·0963	2·8037	3·5794	3·1071
Butter-milk	·1770	·0595	·3652	·0360	·0510
Skim-milk	·1570	·1548	·1472	·1560	·1950
Difference	·2412	·3894	·3839	·2286	·3969
Churning—					
Temperature of cream—					
When churning began .	64°	64°	...	65°	64°
" ended .	63°	62°	...	65°	64°
Time in minutes occupied in churning	40	40	...	35	30
Per cent of fat in the milk recovered in the butter . .	92·5	91·9	*75·8	89·2	82·9
Melting-point of the butter in degrees F.	90°	91·5°	90°	91°	91°
Characteristics of the butter .	Usually firm and good flavour				

* Cream took a long time to churn, and various temperatures were tried, but ultimately apparently churned too hot.

PERIOD 21.

BREWERS' GRAINS (WET).

Began Feb. 28, *and ended April* 10, 1897.

Dry matter in the food	16·4 lb.
Dry matter per 1000 lb. live-weight	17·4 lb.
Albuminoid ratio	1 to 5·5
Average live-weight of the cows at the beginning of this period .	942⅜ lb.

	1st week.	2d week.	3d week.	4th week.	5th week.	6th week.
Weight and analysis of milk—						
Milk in lb. per cow per week . .	158	177·1	189·4	189·9	180	160·7
Per cent of fat in milk	4·3	3·9	4	4	3	2·6
Do. of solids not fats	9·37	9·41	9·46	9·70	9·48	9·13
Weight in lb. of butter and by-products of 100 lb. of milk—						
Butter . . .	4·5759	4·1845	4·2411	4·0364	3·6086	...
Butter-milk . .	20	23	20	25	30	...
Skim-milk . .	75·3	71·4	76	69·35	65·6	...
Difference . .	·0241	1·5155	+ ·2411	1·6136	·7914	...
Analysis of butter and by-products—						
Per cent of fat in butter	84·7	83·8	83·1	83·7	82·6	82·1
Do. in butter-milk	·2	·2	·2	·3	·6	·4
Do. in skim-milk .	·2	·25	·25	·2	...	...
Fat in lb. found in the products of 100 lb. of milk—						
Butter . . .	3·8758	3·5065	3·5243	3·3785	2·9807	...
Butter-milk . .	·0400	·0460	·0400	·0750	·1800	...
Skim-milk . .	·1506	·1780	·1900	·1387	...	...
Difference . .	·2336	·1695	·2457	·4178	+ ·1607	...
Churning—						
Temperature of cream—						
When churning began	60·5°	58°	60°	60°	60°	65°
Do. ended	60°	59°	60°	60°	60·5°	65°
Time in minutes occupied in churning .	40	40	35	35	120	35
Per cent of fat in the milk recovered in the butter . . .	90·1	89·9	88·1	84·4	...	...
Melting-point of the butter in degrees F. .	92·5°	92°	92°	91	91	...
Characteristics of the butter . . .	Very	low	quality			

SUMMARY OF RESULTS OBTAINED DURING THE LAST WEEK OF EACH PERIOD.

1	2	3	4			5	6			7	8	9	10	11	12
	Weeks in use.	Cows used.	Milk.			Per cent solids not fats.	Fats.			Butter in lb. per 100 lb. of milk.	Per cent of fat in the butter.	Per cent of fat in the butter-milk.	Melting-point of the butter in degrees F.	Quality of the butter.	Increase or decrease of live-weight in lb. per cow.
			Lb. per cow first week.	Lb. per cow last week.	Above or below normal.		Per cent.	Per cent above or below average.	Per cent recovered in the butter.						
Pasture	3	4	264·5	275·5	+7	9	3·52	...	90·2	3·77	...	1·25	90	1st	...
Vetches	4	4	221·2	129·5	−38·5	9·42	3·96	...	90·9	4·23	...	·4	92	2d	...
Vetches and draff	4	4	172·2	161	Average	9·11	3·70	...	84·7	3·68	...	·78	93	3d	...
Maize	4	4	154·7	130·4	−9·4	9·25	3·74	...	88·7	3·90	...	1·2	92·5	1st	−26
Beans	4	5	140	99·2	−24	8·92	3·95	...	92·4	4·29	...	·2	90·5	1st	+15
Paisley-meal	5	5	109·4	80	−15·8	9·06	4·05	...	90·5	4·48	82·5	1·1	87	3d	+10
Oats	5	5	...	...	...	8·89	4·26	...	90·6	4·65	83	·35	90·5	1st	+25
Linseed-cake	5	6	...	...	...	9·52	4·02	...	94	4·58	84	·75	95	bad	−8
Decorticated cotton-cake	5	6	...	...	...	9·33	4·75	...	91·2	5·10	85	·10	103	1st	+47·8
Grains, bran	5	6	165·2	162·2	+7·5	9·38	3·80	+1·3	87	4·25	81·3	1·10	89·5	3d	−26
Mixture	5	7	172·6	186·4	+17·8	9·35	3·60	−4	93	4·20	80·1	·20	89	1st	−8
Pasture	5	8	203·4	221·7	+17·3	9·22	3·60	−4	87·8	3·72	85	·67	90	1st	+23
Decorticated cotton-cake	5	8	212·1	166·5	−15·8	9·14	3·70	−1·3	*88·5	3·76	85·3	·25	100	1st	+58·5
Do. and meat-meal	5	8	176·4	148·6	−8·3	9·73	4·15	+10·7	90·3	4·50	83·3	·80	95	3d	+7
Cummins	5	8	142·7	98·4	−23·3	9·30	4·00	+6·6	88·2	4·19	84·5	·65	90	1st	+90·5
Sugar-meal, B	5	8	127·7	111·0	−2	9·33	3·55	−5·4	86·3	3·68	82	·50	87	bad	−15·7
Paisley-meal	3	8	117·1	118·5	+7·8	9·11	3·77	...	88·4	†4·07	80·3	·60	88	bad	+30
Grey peas	5	8	122·0	131·2	+21·8	9·35	3·80	+1·3	93·1	3·94	84	·20	88·5	1st	+6·25
Do. and sugar-meal, A	5	8	154·2	139·2	Average	9·35	3·70	−1·3	86·0	3·83	83·5	·70	88	3d	+11·5
Beans	5	8	167·2	130·2	−14·8	9·25	3·75	Avg.	*86·0	3·57	85	·30	91	1st	−5·1
Draff	5	8	158	180	+25·3	9·48	3	−20	...	3·60	82·6	·60	91	bad	−42
Do.	6	8	158	160·7	+15	9·13	2·6	−30	...		82·1	·40	...	3d	...

* Average of the fourth and fifth weeks.

† The third week.

General Conclusions.

The effect of some of the foods used has been very marked on the milk-yield, and is not always in the direction indicated by public opinion. A most noticeable feature of the experiments of 1895-96 was the great shrinkage in the yield of milk during the period that the cows were being fed on vetches. The normal shrinkage of the milk of an average cow is calculated at 3·6 lb. per week. With this allowance the milk-yield during period 2, when vetches were used, was 38·5 per cent less than it should have been. The ration at this time was a highly albuminous one, and the food approaching it most nearly in composition was given in period 5, when bean-meal was used. During this period (5) the average yield of milk fell in a month from 140·1 lb. to 99·2 lb. per week, which, with the previous allowance of 3·6 lb. per week for advance of lactation, amounts to a decrease of 24 per cent.

The food during period 9, when cotton-cake was used, was also rich in albuminoids; but as the milk record for this period was accidentally destroyed, no data are available for comparison. Decorticated cotton-cake-meal was, however, again used during period 13 in June 1896, and the figures then available point in the same direction. During the five weeks of that period the milk fell from an average of 212·1 lb. per cow per week to 166·5 lb., which, after making allowance for shrinkage owing to lactation, gives a yield 15·8 per cent under what it should have been. In the following period the food was of a still more albuminous nature; but the cows seem by this time to have in part become accustomed to this class of feeding, for the actual yield was only 8·3 less than it is estimated it should have been. The food during period 15 was also a fairly nitrogenous one, and the actual yield of milk was 23·3 per cent less than the estimated yield.

During period 20, when bean-meal was used, the shrinkage was 14·8 per cent more than it should have been, compared with 24 per cent when bean-meal was used on the previous occasion during period 5.

The six periods when a highly nitrogenous ration was used therefore stand thus:—

PERCENTAGE OF MILK LESS THAN THE ESTIMATED NORMAL YIELD DURING THE PERIODS WHEN A HIGHLY ALBUMINOUS RATION WAS USED.

Period.		Per cent.
2.	Vetches, decrease of	38·5
5.	Beans, "	24
13.	Decorticated cotton-cake, decrease of . . .	15·8
14.	" " and meat-meal, decrease of	8·3
15.	Cummins, decrease of	23·3
20.	Beans, "	14·8

This table would therefore seem to indicate that a highly nitrogenous ration is in some way prejudicial to the milk-yield. At this stage it is, however, impossible to determine whether the shrinkage is caused by an excess of albuminoids as such in the ration, or by some peculiar action of the special foods which happen to have been used, and which becomes marked only when these foods are given in excessive quantities.

Where, however, the albuminoid ratio is wider—viz., 1 to 6 or over—we find quite a different result, as is shown by the following table:—

PERCENTAGE OF MILK MORE THAN THE ESTIMATED NORMAL YIELD DURING THE PERIODS WHEN AN ALBUMINOID RATIO OF 1 TO 6 AND OVER WAS USED.

Period.	Per cent.
10. Grains, bran, &c.	7·5
11. Ordinary mixture	17·8
12. Pasture, new	17·3
17. Paisley meal	7·8
18. Peas	21·8
21. Brewers' grains (wet)	25·3

While all the other foods were used for five weeks, the brewers' grains were continued one week longer. During the last week the yield of milk fell off very much, the total for that week being 15 per cent above the estimated normal yield, while it was 25·3 per cent the week before. During this week the cows, instead of losing heavily in live-weight as they had been doing during the five previous weeks, made a trifling gain. No animal lost in live-weight this week, the gain being uniform over all.

FOOD USED.	No. of cows.	MILK.			4th week. Per cent of fat.
		1st week.	Last week.	Per cent. Rise or fall.	
		lb.	lb.		
Pasture in June	4	...	209·3	...	3·9
Vetches	4	181·3	182·7	+ 7·1	3·40
Italian grass, sewage grown	4	187·9	169	− 5·6	3·45
Do. and dried grains	4	169·2	154·7	− 2·4	2·96
Do. maize and potatoes	4	184·6	155·9	−15·6	3·57
Carrot-leaves and bean-meal	4	186	162·4	− 7·3	3·96
Cabbages and ground-wheat	4	178·5	155·9	− 7·1	3·65
Do. decorticated cotton-cake	4	160·6	157·8	+ 5·3	3·77
Do. barley-meal	4	163·3	152·5	−11·2	3·66
Do. linseed-cake	4	174·6	183·6	+12·1	3·57
Do. dried grains and mixed meals	4	178	166·7	− ·3	3·35

In the experiments carried out here in 1893-94, and recorded in the 'Transactions' of 1894, a less weight of concentrated food was used. As the variations in the milk do not correspond in many particulars with those obtained during the past two years, a summary may with advantage be reproduced here. It should also be kept in mind that in 1893-94 each food was used only for four weeks, against five weeks on this occasion (see previous table).

Butter-fat.

From period 1 to 9 inclusive—the foods which were reported on in the 'Transactions' for 1896—the variations in the quality of the milk were much greater than have occurred during the past year. There may be several reasons for this, the most potent of which is probably the smaller number of cows (4) used in 1895 compared with that (8) used last year. It is also very probable that, owing to the smaller number used in 1895, a larger proportion were cows giving very rich milk. Both influences seem to have had considerable effect on the results, for the average butter-fat of the last week of each period was 4 per cent in 1895, while last year it was 3·75. The results of the past year may therefore be looked on as the more reliable of the two.

Comparing the rise and fall of milk with the rise and fall of fat, the following table gives some interesting results:—

FOOD.	Period	Per cent. Rise or fall in milk.	Per cent. Rise or fall in fat from average.	Albuminoid ratio of the food.	Lb. of dry matter in the food per 1000 lb. live-weight.	Gain or loss in lb. of live-weight.
Grains dried, brans, &c.	10	+ 7·3	+ 1·3	1 to 6	22·74	−21
Mixture of various grains . . .	11	+17·8	− 4	1 to 6·24	24	− 8
Pasture . . .	12	+17·3	− 4	...	...	+23
Decorticated cotton-cake. . . .	13	−15·8	− 1·3	1 to 3·6	33·42	+58½
Decorticated cotton-cake and meat-meal.	14	− 8·3	+10·7	1 to 2·4	31·27	+ 7
Cummins . . .	15	−23·3	+ 6·6	1 to 4·8	36	+90½
B sugar-meal . .	16	− 2	− 5·4	1 to 4·8	33·61	−15¾
Paisley meal * . .	17	+ 7·8	average	1 to 7·7	32·41	+30½
Grey peas . . .	18	+21·8	+ 1·3	1 to 6·1	32·38	+ 6¼
Grey peas and A sugar-meal . . .	19	average	− 1·3	1 to 7	35·91	+11½
Beans	20	14·8	average	1 to 5·7	32·2	+ 4¾
Wet grains (draff) .	21	+25·3	...	1 to 5·5	17·4	−42

* Used only for three weeks.

In the foregoing table periods 13, 14, and 15 should be grouped together, and the shrinkage in milk over the normal equally divided between them, as all the foods used are of much the same class. As the table stands, probably too great a shrinkage is put down to decorticated cotton-cake and too little to meat-meal; because it is probable that if meat-meal had been used first and cotton-cake afterwards, the rates of shrinkage might have been reversed. The excessive shrinkage in the milk-yield when cummins were used is difficult to account for; but it may be due to the same influence which resulted in 38·5 and 24 per cent shrinkages when vetches and beans were used during periods 2 and 5.

The foods followed by the greatest decrease in quantity of milk are, as already pointed out, those with a high albuminoid ratio, all being under 1 to 5. The only exception to this is the period when B sugar-meal, with a ratio of 1 to 4·8, was used, and the shrinkage in this case may be due to some cause other than food. Curiously enough there is a gain in both quantity and quality with peas, the ratio of which is only slightly different from beans, so that in all probability some other cause was at work besides the albuminoid ratio. It is, however, worthy of notice that when bean-meal was used during period 5 in 1895, the shrinkage then was 24 per cent, which is excessively heavy. This is all the more remarkable, as the previous food was a mixture of Indian meal and barley meal, neither of which is hardly ever looked on with much favour by milk producers.

The results obtained during period 21 when fresh brewers' grains in the wet state were used were abnormal. Previous to being put under test, these cows had probably never tasted brewers' grains, and in the first week they could not be induced to eat over 20 lb. each daily, along with a little bean-meal. The fat in the milk during that week went up to 4·3 per cent, and during the third week still stood at 4 per cent, although the cows by that time were consuming 40 lb. each daily. For the fourth week the fat was estimated to be 4 and the fifth week 3 per cent, but in neither case, and particularly the latter, was it possible to get a reliable determination. During the fifth week eight trials were made, no two of which corresponded, the tubes of the test bottles being so blocked with some black substance as to render all the readings unreliable. Some of the bottles could not be read at all, and the others varied so much that the amount stated for the fifth week is more a guess than a determination. During three years' experience of this manner of testing milk, this is the only occasion on which a thoroughly reliable determination was not arrived at. The cream was also difficult to churn, and, taken all over, the milk could scarcely be said to be normal. In order to see what the ultimate result would be, the feeding was continued for another week, when the milk was found to contain only 2·6 per cent of butter-fat. On this occasion no difficulty was experienced in determining the fat in the whole milk; but owing to the same difficulty as in the previous week, no reliable determination could be made of the separated milk.

The most noticeable, and in fact the most important, feature in connection with the fat in the milk is the strong tendency shown in these experiments for the fat to return to its normal percentage. If a food is used having a tendency, like new pasture or "grains"—wet or dry—to reduce the quality, the lowest point may not be reached for several weeks, after which the percentage of fat may begin to improve. If, however, foods are used which have a tendency to enrich the milk, the percentage of fat will rise during the first, second, and occasionally during the third week, after which it will gradually decrease till the normal is reached somewhere near the end of the fifth week. In the following table, extending through all the periods (except pasture) during which one food was used for five weeks, this tendency is very clearly shown:—

TABLE showing the tendency of the percentage of Fat in Milk to rise after each Change, and then gradually to decline to near the Normal.

Period.	1st week. Percentage of fat.	2d week. Percentage of fat.	3d week. Percentage of fat.	4th week. Percentage of fat.	5th week. Percentage of fat.
6	4·11	4·43	4·38	4·26	4·05
7	4·24	4·49	4·46	4·5	4·26
8	...	4·85	4·23	4·08	4·02
9	4·60	5·20	4·85	5	4·75
10	3·9	3·65	4	3·8	3·75
11	3·85	3·50	3·55	3·35	3·60
13	4	4	4·25	4	3·7
14	3·97	4·1	4·25	4·1	4·15
15	4·3	4	3·7	4	4
16	4·1	3·8	3·7	3·7	3·5
18	3·7	3·7	3·6	3·6	3·8
19	3·7	3·8	3·7	3·6	3·7
20	3·7	3·7	3·7	3·8	3·75
	48·17	53·22	52·37	51·79	51·03
Average	4·01	4·09	4·03	3·98	3·92
	Rise over 5th week.	Rise over 1st week.	Fall under 2d week.	Fall under 3d week.	Fall under 4th week.
	·09	·08	0·6	·05	·06

Averages are always to be much more relied on than single results, and the greater the number the average represents, the more accurate are they likely to be. In the preceding table of averages the rise and fall are not absolutely steady, but on the whole are fairly so, and are clearly indicative of the general tendency for the fat in milk to rise after each change, and later on to gradually revert to normal conditions. Had the number of cows used been greater, and had the rations used contained none of those foods which have a tendency to increase the flow of milk at the expense of quality, and had the milk of each day been tested separately for the whole period, the probability is that a uniform rise would have been recorded for a certain number of days, followed by a gradual decrease to the normal.

In 1893 and 1894 I carried out an experiment to test the effect of food on milk, which was recorded in the 'Transactions' of 1894. The tendency of the milk to return to its normal quality was not noticed at that time, as the grouping of the results did not suggest it. They are, however, reproduced here, so as to show this tendency:—

PERCENTAGE OF FAT IN THE MILK OF EACH WEEK DURING THE EXPERIMENTS OF 1893-94.

	Cows used.	1st week.	2d week.	3d week.	4th week.
Pasture in June	4	...	...	...	3·9
Vetches *ad lib.*	4	3·78	3·85	3·76	3·49
Green Italian grass	4	3·9*	3·9	3·65	3·45
Do. and dried grains .	4	3·42	3·15	2·71	2·96
Potatoes and maize	4	2·91	3	3·23	3·57
Carrot leaves and beans. . . .	4	3·71	3·75	4·00	3·96
Cabbages and wheat	4	3·52	3·83	...	3·65
Do. decorticated cotton-cake .	4	4·36	3·77	3·25	3·77
Barley	4	3·61	3·46	3·46	3·66
Linseed cake	4	3·77	3·65	3·47	3·57
Dried draff and mixed grain . . .	4	3·49	3·27	3·36	3·35
Average, excluding pasture, dried grains, and dried grains with mixed grain .	4	3·69	3·65	3·55	3·64

Average percentage of fat during the 1st week over the 4th . . ·05
" " 2d week under the 1st . . ·04
" " 3d week under the 2d . . ·10
" " 4th week over the 3d. . . ·09

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* The milk of the first and second week was mixed, and the figures given represent the average of the two weeks.

This increase or decrease is very uniform. The extremes are not so great as occurred in 1895, 1896, and 1897, yet the tendency for the milk to return to its normal condition is quite distinct.

It will be noticed that when maize was used there was a gradual rise from the first week to the last. This rise seems not to have been caused so much by any effect the maize has in raising the quality as from the low percentage the fat had reached through the use of dried grains during the previous month. Owing to that fact the general averages are considerably distorted, if the results of the maize are included among them. Excluding the maize, and the two periods when grains were used, the averages for the other foods are as follows:—

Per cent of fat in the milk during—

1st week	3·81
2d „	3·74
3d „	3·60
4th „	3·65

Average per cent of fat in the milk during the—

1st week over the last . .	·16
2d „ under the 1st . .	·07
3d „ „ 2d . .	·14
4th „ over the 3d. . .	·05

During periods 3 and 10, when grains were used for four weeks along with other foods, the same tendency was shown in exactly the opposite direction, thus:—

Average per cent of fat in the milk during the—

1st week	3·95
2d „	3·21
3d „	3·03
4th „	3·15

The lowest per cent of fat was reached during the third week, after which it began to rise, but the length of time this food was used was too short to admit of the rise reaching its limit.

In the above periods the dry matter of the grains used did not exceed one-third of the total dry matter of the food, but during period 21 it was almost one-half, and the length of time they were fed was six weeks instead of four. The average for the three periods, 3, 10, and 21, is as follows:—

Per cent of fat in the milk during the—

1st week	3·86
2d „	3·59
3d „	3·83
4th „	3·83
5th „	3
6th „	2·6

In period 21 the lowest quality was not reached till the sixth week, and even then the minimum may not have been arrived at, so that where excessive quantities of grains are used along with a minimum of other foods, it is difficult to say when the lowest point will be reached.

Dry Matter in the Food and Live-weight.

In the periods from 10 to 20, both inclusive (excluding, however, the pasture period and the one when Paisley meal was used, which only extended to three weeks), the average dry matter used was 31·33 lb., and the average gain in live-weight 3 lb. per week. The greatest gains in live-weight were when the largest amount of dry matter was used, the gain or loss closely approximating to the dry matter used. Two exceptions to this rule seem to be the sugar foods used. During period 9, with 33·61 lb. dry matter, there was a loss of 15¾ lb. in five weeks, and during period 19, with 35·91 lb., there was a gain of 11½ lb. in five weeks. With these exceptions the results are fairly uniform, and seem to indicate that about 26¾ lb. of dry matter was necessary to produce milk and keep up the body. In this calculation period 16 has been excluded, for several reasons. This weight is fully more than Wolff gives as his standard, and while the increases in live-weight extend over a fairly large number of animals, and for a comparatively long period, the decreases are more limited, and are therefore scarcely so reliable.

The dry matter in the food per 1000 lb. live-weight does not vary greatly from period 13 to 20, and if 15 and 19 are excluded, the variation is much less. In periods 19 and 20, while the weight of dry matter consumed is practically the same, the results are very different. During periods 10 and 11 the yield of milk was high, and the percentage of fat not much below the average, while the dry matter given in the food was very low—viz., 22·74 lb. and 24·5 lb. per 1000 lb. live-weight. The good results from these foods seem to corroborate Wolff's standard of 24 lb. per 1000 lb. live-weight.

During period 21 the dry matter used was very low—viz., 17·4 lb. per 1000 lb. live-weight. This was the only occasion on which decided underfeeding was tried, and, as will be seen by the live-weight tables, it resulted in a loss of 42 lb. per animal.

Solids other than Fats.

The solids other than fats have generally risen or fallen with the fats, remaining, however, usually much more steady than the fats.

Churnability of the Milk.

The churnability of the fat in the milk was usually low when the butter produced was soft, and high when the butter was hard. If the ripening, churning, and after-manipulation of the butter are each done in the best manner, from 88 to 90 per cent of the butter-fat in the milk would seem to be recoverable as butter, as is the case when the milk has been produced by cows fed solely on pasture. Such foods as grains (wet or dry), Paisley meal, and foods containing a large proportion of sugar, produce a milk from which slightly less is recovered; while such foods as oats, decorticated cotton-cake, beans, and peas give a milk from which a fully higher percentage of the fat may be recovered in the butter. This is most distinctly seen by a reference to the fat in the butter-milks, where it will be found that the percentage of fat in the butter-milk from the first-named foods usually ranges from ·6 per cent upwards, while from the latter it is generally from ·3 per cent downwards.

It is a curious fact that during the continuation of these investigations, particularly those of the last year, the amount of butter-fat recovered in the butter and by-products is considerably short of that in the milk. This loss seems greater than can be accounted for by loss when handling the different products, as every precaution was adopted which was likely to conduce to reliable results. Some of the persons doing the churning and working of the butter succeeded better than others; but even where the best results are obtained, the loss seems so great that this portion of the subject requires further inquiry. The weight of butter, butter-milk, and skim-milk usually compared fairly well with the total weight of milk employed, and with accurate methods and careful manipulation there seems no reason why the butter-fat in the milk should not, practically speaking, be all recovered in the butter and by-products.

Water in the Butter.

Most of the soft butters contained a high percentage of water, which could not be lessened by any ordinary manipulation, nor by the aid of a centrifugal drier, while the hard butters were generally very dry. The milk of cows fed on albuminous foods seems to yield butter having a tendency to be firm and close in the texture, while the percentage of water which it contains is very low.

Churning Temperatures.

The proper temperature at which cream should be churned varies greatly with the class of cow in use, the season of the year, and the period of lactation, but most of all with the food. Each food seems to have a temperature peculiar to itself, at which churning can be most successfully carried through. The range is very wide, and extends from 55° F. to about 70° F., if not higher. Yet with cream from the use of certain foods better butter may be produced by churning at 70° F. than can be produced from cream from other foods, though the churning is done at 56° F.

For instance, in the middle of summer, when decorticated cotton-cake was used with green Italian ryegrass, good firm butter was produced although the cream was churned at from 65° F. to 70° F. On the other hand, soft spongy butter was produced during periods 10, 11, and 21, when dried grains or wet draff was used; also during period 17, when Paisley meal was used, even although the cream was churned in these cases at from 56° F. to 58° F.

Many of the difficulties of getting cream to churn properly arise from using too high or too low a temperature, as buttermakers are not generally aware that food exercises such a strong influence on the cream as to necessitate a considerable variation in the temperature at which the best results are obtained when churning. This is a point which hitherto has received little or no attention, but which will well repay further investigation.

Melting-point of the Butter.

In no respect has food greater influence on butter products than on the melting-point of the butter. Through injudicious churning soft butter may be made from good cream, but good, firm butter cannot be made from cream which has been produced by the use of certain foods. Paisley meal and B sugar-meal, for instance, during periods 6, 16, and 17, gave butter with a melting-point as low as 87° F. for two weeks. Good butter produced on pasture has a melting-point of from 90° F. to 90·5° F., and this temperature may therefore be taken as a standard. On the other hand, the use of most concentrated foods rather tends to raise the melting-point of the butter—one or two, where used extensively, to a very high degree. For instance, during periods 9 and 13, when decorticated cotton-cake was used, the melting-point was as high as 106° F. for one week, 105° F. for another week, and 103° F. for two weeks. It is a common saying that "butter goes mad twice in the year—first during summer when it is too soft, and again during winter when it is too hard." These faults in butter may in great part be corrected by a judicious use of concentrated foods having a tendency to produce the opposite effect; and qualities in certain foods which are generally looked on as detrimental to the production of the best quality of butter, when used extensively, may with care and judicious selection be of the greatest advantage to the buttermaker when used more moderately. For instance, no more common complaint exists than soft butter in summer-time, and this may in most cases be remedied by a judicious use of decorticated cotton-cake.

Flavour and Keeping Quality.

Besides churning temperature and melting-point, most foods seem to convey some peculiar flavour to the butter produced by their consumption. To a knowledge of this effect many of our most successful buttermakers acknowledge that they owe their success. Some few foods hold a neutral position—doing little good and no direct harm; but while others are beneficial, many, if used in considerable quantities, prevent the making of even second-class butter. Unfortunately this quality cannot be gauged by a thermometer or other standard measure like the churning temperature or melting-point, as all have not an identical sense of taste and smell. Linseed-cake is very noticeable in this respect, and, unless in very limited quantity, should not be used where the milk is to be made into butter. Much the same applies to Paisley meal, the two sugar foods tried, and "grains" in large quantity. Oats, decorticated cotton-cake, beans, and peas all produced good butter.

Colour in the Butter.

With the exception of decorticated cotton-seed-cake, none of the artificial or concentrated foods tried seemed to have any particular effect in keeping up the colour of the butter. This quality seems to be possessed in a much greater degree by pasture and other green foods than by any of the concentrated foods, for even with decorticated cotton-cake the effect is not very marked.

Summary.

Rations having an extremely high albuminoid ratio seem to have a depressing effect on the milk-yield, well mixed foods giving the best results in this respect. Every food, when first given, seems to have more or less effect in increasing or decreasing the percentage of fat in the milk. This effect is, however, transitory, and the milk returns to its normal composition about the end of the fifth week. Grains in the wet state and in excessive quantity may be an exception to this general statement.

Provided extremes are avoided, the dry matter in the food seems to be the principal controlling factor in the production of milk or increase of live-weight, and is of greater importance than the albuminoid ratio.

The fat in the butter-milk is considerably influenced by the food used; but where the cream was churned at the proper temperature, the churnability of the milk appeared to be less affected by food than the experiments of 1895 seemed to indicate. All other things being equal, each food or combination of foods seem to produce a milk which necessitates the cream from it to be churned at a temperature peculiar to itself if the best results are to be obtained.

Soft butters usually contain a proportion of water greater than the average, and if the softness is caused by the foods used, the excess of water cannot be reduced by the ordinary methods of manipulation. Food exerts a very great influence on the melting-point (firmness) of butter, and this characteristic may in hot or cold seasons be used with considerable advantage. Nearly all foods exercise some peculiar effect on the flavour of the butter—most, however, do so very slightly, and may therefore be said to be neutral; but some have a good effect and others a bad effect.

Colour in butter seems to be principally derived from green food, and very little from the concentrated foods. To get the best results, some food should always be used which has a tendency to increase the flow of milk, combined with limited quantities of other foods the tendencies of which are to increase the fat.

For the production of milk to be consumed fresh, any of the foods experimented with may be used successfully if fed judiciously and in moderate quantity.

If, however, first-class butter is the object, linseed-cake, grains (wet or dry), Paisley meal, and foods containing a large proportion of sugar should be discarded, or reduced to the lowest limits possible.

The principal concentrated foods experimented with having a beneficial effect on the butter are oats, decorticated cotton-cake, beans, and peas.

As during the experiments of 1895-96, Mr David Wilson, yr. of Carbeth, Convener of the Science Committee of the Highland and Agricultural Society, has given me valuable assistance during the progress of the experiments and in the revision of the proofs, and to him and all who have been associated with me in this investigation I tender my sincere thanks for the help so willingly accorded.

THE CEREAL AND OTHER CROPS OF SCOTLAND FOR 1896, AND METEOROLOGY OF THE YEAR RELATIVE THERETO.

THE CROPS.

THE following comparison of the cereal and other crops of 1896 with those of the previous year has been prepared by the Secretary of the Society from answers to queries sent to leading agriculturists in different parts of the country.

The meteorology of the year has been furnished by Dr Alex. Buchan, Secretary of the Meteorological Society of Scotland.

The queries issued by the Secretary were in the following terms:—

1. What was the quantity, per imperial acre, and quality of grain and straw, as compared with last year, of the following crops? The quantity of each crop to be stated in bushels. What quantity of seed is generally sown per acre?—(1) Wheat, (2) Barley, (3) Oats.
2. Did the harvest begin at the usual time, or did it begin before or after the usual time? and if so, how long?
3. What was the quantity, per imperial acre, and quality of the hay crop, as compared with last year, both as regards ryegrass and clover respectively? The quantity to be stated in tons and cwts.
4. Was the meadow-hay crop more or less productive than last year?
5. What was the yield of the potato crop, per imperial acre, as compared with last year? The quantity to be stated in tons and cwts. Was there any disease? and if so, to what extent, and when did it commence? Were any new varieties planted, and with what result?
6. What was the weight of the turnip crop, per imperial acre, and the quality, as compared with last year? The weight of the turnip crop to be stated in tons and cwts. How did the crop braird? Was more than one sowing required? and why?
7. Were the crops injured by insects? State the kinds of insects. Was the damage greater or less than usual?
8. Were the crops injured by weeds? State the kinds of weeds. Was the damage greater or less than usual?
9. Were the pastures during the season of average growth and quality with last year?
10. How did stock thrive on them?

11. Have cattle and sheep been free from disease?
12. What was the quality of the clip of wool, and was it over or under the average?

From the answers received, the following notes and statistics have been compiled:—

EDINBURGHSHIRE. *Wheat.*—About 48 bushels; quality very fine if secured before the weather broke; straw about the same as last year; 3 bushels seed sown.

Barley.—About 45 to 50 bushels; quality better than last year; straw about the average; 3 bushels seed sown.

Oats.—About 48 bushels; quality fine if secured early, but the most of the crop was in stook during the rain and got very much discoloured and damaged, and the straw very inferior; seed sown, 4 bushels.

Harvest commenced about the middle of August, or two weeks earlier than last year.

Hay.—Not so heavy a crop as last year; about 2 tons 10 cwt; mostly well secured and fine quality. Very good second crop; partly well secured. *Meadow-hay*—About the same as last year, and very well got.

Potatoes.—About the same as last year, and quite free from disease. Some new varieties grown with very good results.

Turnips.—About the same as last year. Yellow, 25 tons, and swede, 20. Some cases of second sowing, especially swedes. *Mangel-wurzel*—A very heavy crop; about 30 tons.

No damage from insects. Very little damage by weeds.

Live Stock.—Pastures not so good as last year, owing to the dry weather during May and June. Stock healthy and quite free from disease. *Clip of wool*—About the average, and wool the same price as last year.

LINLITHGOWSHIRE. *Wheat.*—Better in quantity and quality than last year; from 30 to 40 bushels; seed from 2½ to 3 bushels.

Barley.—Better in quantity and quality than last year; from 30 to 40 bushels; seed from 2½ to 3 bushels.

Oats.—Better in quantity, but not so good in quality as last year; seed from 4 to 6 bushels.

Harvest began about three weeks earlier than last year, and would end in many cases a month later. The weather broke about the beginning of September and continued very wet till the end of October, and spoiled a fine crop.

Hay.—Better in quantity and quality than last year; from 1½ to 3 tons. *Meadow-hay*—Very little grown, but better than last year.

Potatoes.—Better in quantity and about the same in quality as last year; a good deal of disease in the early sorts; from 5 to 10 tons.

Turnips.—Much better than last year. Brairded well; and very little second sowing.

No injury by insects or weeds.

Live Stock.—Pastures of average growth and quality. Stock throve well, and were free from disease. *Clip of wool*—Average.

HADDINGTONSHIRE (Upper District). *Wheat.*—None grown.

Barley.—32 to 34 bushels; more straw than last year; quality of grain and straw very much damaged by rain; 3 bushels sown.

Oats.—36 to 40 bushels; quality of grain and straw not so good as last year, being very much damaged by rain; 4 bushels sown.

Harvest commenced three weeks earlier than last year.

Hay.—2 tons to 2 tons 10 cwt. per acre ; quality of ryegrass and clover better than last year. *Meadow-hay*—Less than last year.

Potatoes.—6 to 7 tons ; no disease ; no new varieties planted.

Turnips.—16 to 19 tons per acre ; of better quality than last year. Crop brairded well ; only one sowing.

Not more than usual injury by insects, and none by weeds.

Live Stock.—Pastures during the season of average growth and quality with last year. Stock throve very well, and were free from disease. *Clip of wool*—Average clip of good quality.

HADDINGTONSHIRE (Lower District). *Wheat.*—48 bushels, or 6 quarters ; fine quality ; straw about same as last year ; 3½ bushels sown.

Barley.—50 bushels ; fine quality ; same straw ; 2¾ bushels sown.

Oats.—48 bushels ; fine quality ; same straw ; 4 bushels sown.

Harvest commenced 8th August, about a week earlier than last year.

Hay.—2 tons ; fine quality. No *Meadow-hay.*

Potatoes. — 8 tons ; no disease ; some new varieties planted were Up-to-Date, Home Rule, Gaston, with good results.

Turnips.—30 tons, in some cases a little more ; better than last year. Brairded well ; no second sowing.

No damage by insects. No damage by weeds.

Live Stock.—Pastures much the same as last year, but better in autumn. Stock throve well, and were free from disease. *Clip of wool*—A full average.

BERWICKSHIRE. *Wheat.*—33 bushels ; average quantity and quality, unless damaged by harvest weather ; seed, 3 bushels.

Barley.—36 bushels ; very good quality, except what was damaged by harvest weather ; one-third out in early district and two-thirds in later district, when weather broke ; straw, same ; seed, 3 bushels.

Oats.—33 bushels ; good quality ; more than one-half spoilt by weather very badly ; straw, much under average ; seed, 4 bushels.

Harvest very early, first week in August.

Hay.—25 cwt. ; very good quality. *Meadow-hay*—Less ; not much grown in the county.

Potatoes.—8 tons ; very little disease, but prices *low.*

Turnips.—20 tons ; good braird ; only once sown.

No damage by insects or by weeds.

Live Stock.—Pastures much lessened by dry weather first part of season, better latter half. Stock throve not so well as last two years. Cattle and sheep free from disease. *Clip of wool*—Average in quantity and quality.

ROXBURGHSHIRE. *Wheat.*—Above an average crop, about 35 bushels, and straw good ; almost all secured before rain ; but small breadth sown in Roxburghshire ; seed, 3½ bushels.

Barley.—About 32 bushels ; good quality where secured before the rain, but a large proportion very much deteriorated with the wet weather ; straw also.

Oats.—About 33 bushels ; a large proportion a good deal damaged with the wet weather ; straw also.

Harvest began about the usual time.

Hay.—Rather under average ; 30 cwt. *Meadow-hay*—About average.

Potatoes.—A large crop, about 8 tons, and mostly free of disease ; Main-crop, Kidneys, and Up-to-Date were entirely free of disease.

Turnips.—Brairded well ; large crop and good quality ; about 24 tons per imperial acre.

A little wireworm among the turnips. Little damage by weeds.

Live Stock.—Pastures not so good as last year; burnt with drought in the earlier part of the season. Stock throve pretty well, and were free from disease. *Clip of wool*—About average.

SELKIRKSHIRE. *Wheat.*—None grown.

Barley.—32 bushels; quality inferior owing to the wet harvest; seed sown between 3 and 4 bushels—some farmers sow thick, others thin, but you may take that as an average.

Oats.—36 bushels; quality inferior owing to the wet harvest; straw also inferior from the same cause; seed sown, 4½ bushels.

Harvest began about the usual time, and lasted double the usual time; very expensive harvest.

Hay.—2 tons of fine quality. *Meadow-hay*—More productive; quality very fine.

Potatoes.—Should say 8 tons; few grown, only for home consumption as a rule; practically no disease.

Turnips.—Say 18 tons when sound; quality good—crop in many instances brairded very bad, and many sown over a second time, and some three times, owing to the drought; a good deal of finger-and-toe.

No damage from insects. When the turnips did not branch, the weeds were in great force; otherwise no trouble from weeds.

Live Stock.—Pastures quite an average. Stock throve well, and were quite free from disease; usual death rate. *Clip of wool*—Average clip.

PEEBLESSHIRE. *Oats.*—36 bushels; quantity of seed sown, 5 bushels per acre; quality of grain and straw inferior to last year.

Harvest began at the usual time.

Hay.—2 tons 5 cwt. per imperial acre; quality very good; clover plentiful. *Meadow-hay*—More productive.

Potatoes.—10 tons; no disease; no new varieties planted.

Turnips.—18 tons; quality fair; crop did not braird well, chiefly owing to the turnip-fly; two sowings were required in some instances.

Wireworm did considerable damage, much greater than usual. No injury by weeds.

Live Stock.—Pastures more than average growth. Stock throve well, and were free from disease. *Clip of wool*—Average.

DUMFRIESSHIRE (Mid-Annandale). No wheat or barley grown.

Oats.—35 bushels against 40 last year; straw about the same as last year; quality of both good; quantity of seed sown 4 to, in some cases, 6 bushels.

Harvest began ten days before usual time.

Hay.—Crop very little less than last year, about 30 cwt.; clover unusually abundant; ryegrass slightly under last year. *Meadow-hay*—Under last year.

Potatoes.—12 to 14 tons, as against 8 to 10 last year; no disease. Sutton's Abundance and the Bruce are the kinds planted in this district.

Turnips.—Average about 32 tons, or fully one-third more than last year. Crop brairded well, and little or no resowing was needed. On a considerable number of farms great damage was done by crows after plants were singled. Resowing was resorted to in this case, but, being late in the season, this part of the crop came to nothing.

The turnip crop on light soils was infested by wireworm. They did damage to the crop indirectly, as the crows pulled up the plants searching for the worms. Owing to dry summer, weeds were easily kept under.

Live Stock.—Pastures would compare favourably with last year. Stock throve well until September, after which, owing to excessive wet, they made little or no progress. Cattle were free from disease, but a good many deaths have occurred amongst sheep on turnips. Disease was red braxy, and was worst when sheep were folded on moory or black-topped land. *Clip of Wool*—Quality good, but under average.

DUMFRIESSHIRE (Nithsdale). *Wheat.*—Not grown.

Barley.—Not grown.

Oats.—30 bushels average; crop after lea good, after turnips small; straw average and well secured, except in few high late districts; 5 bushels seed generally sown.

Harvest early; cutting commenced first week in August, about fourteen days before usual time.

Hay.—Ryegrass, 20 to 25 cwt.; much better than 1895; quality good; clover fair. *Meadow-hay*—An average crop; also much better than 1895.

Potatoes.—Larger crop than last year; about 9 tons; disease very prevalent, showing by middle of August. Earlier varieties about half diseased.

Turnips.—22 tons, and good quality; seed brairded well, and no resowing.

Wireworm especially troublesome in turnip crop before and after singling. Crows very busy, and many fields very patchy, acres being left without a plant. Wild mustard common amongst oats; turnips very dirty; all kinds of weeds abundant. The cleaning of turnip-land seemingly becoming a lost art.

Live Stock.—Pastures came away early in spring, and grass plentiful all through the season, and stock throve well. Cattle and sheep free of all disease, with exception of usual foot-rot amongst park sheep. *Clip of Wool*—Considerably over average, and quality very good.

DUMFRIESSHIRE (Eskdale). No wheat or barley grown.

Oats.—Above the average both in quantity and quality, perhaps to the extent of 4 imperial bushels, and of straw about 20 stones; about 42 imperial bushels.

Harvest nearly a fortnight earlier than usual.

Hay.—3½ tons; quality about the same as last year. *Meadow-hay*—Much more productive, perhaps to the extent of 15 cwt., and all well got.

Potatoes.—Fully a ton more; perhaps 2 cwt. per acre diseased. Disease commenced about beginning of September. No new varieties planted.

Turnips.—Very heavy crops; in exceptional instances about 40 tons per acre, but the average would scarcely exceed 25 tons; first-rate quality. Brairded nicely, but checked by drought in beginning of June; but fine rains coming about the middle of the month put matters right when in a very critical state. Scarcely any sowing over required.

None permanently injured by insects; and no injury where properly wrought, although charlock and chickweed were troublesome.

Live Stock.—Pastures quite an average growth in the early part of the season; then the want of rain injured them, but came away luxuriantly when the rain came about the middle of June. Stock throve very well indeed. Cattle and sheep very healthy. *Clip of wool*—Above an average both in weight and quality.

KIRKCUDBRIGHTSHIRE. *Wheat.*—31 bushels; similar quality to last year; seed, 2½ bushels.

Barley.—30 bushels; better than last year; seed, 3½ bushels.

Oats.—32 bushels; larger yield of both grain and straw, and quality fully as good, except in some cases where late crops suffered much from bad weather in September.

Harvest about ten days earlier than usual.

Hay.—About 25 cwt.; better than last year, but not an average crop; quality good. *Meadow-hay*—Same as above.

Potatoes.—Considerably smaller; 5 tons; little disease.

Turnips.—22 tons; fully 50 per cent over last year. Generally it is one of the largest crops ever seen in the district. All conditions favourable; no resowing required.

Wireworm more prevalent than usual, and considerable damage done by crows pulling plants both before and after thinning. No injury by weeds.

Live Stock.—Pastures during the season of average growth and quality with last year. Stock throve very fairly, and were remarkably free from disease. *Clip of wool*—Good, and an average in weight and quality.

WIGTOWNSHIRE. *Wheat.*—28 bushels; quality of grain and straw same as last year; seed sown, 2½ to 3 bushels, according to state of land and the time of year when sown.

Barley.—32 bushels; quality of grain same as last year; straw same quality as last year, but 25 per cent more quantity than last year; seed sown, 3¾ bushels.

Oats.—34 bushels; quality of oats and straw not so good as last year, owing to wet weather setting in before the crop was secured; quantity of straw 20 per cent more than last year; seed sown, 5 bushels.

Harvest about eight days earlier than usual.

Hay.—Quantity, 33 cwt.; quality good, being well got. No clover hay made in this county. *Meadow-hay*—21 cwt. This crop is ten per cent better than 1895, owing to want of rain in 1895. Quality good in both years.

Potatoes.—3¾ tons; generally a very poor crop; ¾ ton less than last year; no more disease than usual; quality same as former years; no new varieties planted.

Turnips.—15 tons; crops brairded better than last year; more finger-and-toe than last year; crops very irregular owing to finger-and-toe; very little second sowing this year; crop would be 15 per cent better than last year, owing to a better braird.

Not more than usual injury by insects. Weeds about the same as in former years.

Live Stock.—Pastures during the season of average growth and quality with last year. Stock throve well, and were free from disease. *Clip of wool*—Quantity and quality same as in former years.

AYRSHIRE. *Wheat.*—Good and fine crop; 36 bushels.

Barley.—Good crop; 38 bushels.

Oats.—Good crop and fine; 48 bushels.

Harvest ten days earlier than usual.

Hay.—A fine crop; 2 tons, considerably above average. *Meadow-hay*—A good crop; above an average.

Potatoes.—A large crop; 10 tons.

Turnips.—A very large crop; above an average; it brairded very well.

Crops not injured to any extent by insects. Very clear from weeds.

Live Stock.—Pastures very good; the best grass year we have had for twenty years. Stock did very well, and were free from disease. *Clip of wool*—Good; above an average.

BUTE. *Wheat.*—No wheat.

Barley.—3½ bushels sown; yield, 37 bushels; well got, and good quality; straw a bulky crop.

Oats.—5 bushels sown; yield, 36 bushels; well got, and quality generally good; straw a full average crop.

Harvest began on 17th August, about a week earlier than usual.

Hay.—2 tons 1 quarter; well got. Little *Meadow-hay.*

Potatoes.—Commenced to dig early potatoes in first week in June; average yield about 5 tons. Commenced to dig late varieties on 1st October; average yield 7 tons. Very little disease. The Beauty of Bute variety proved a good cropper.

Turnips.—From 20 to 30 tons; good quality; crop brairded well; no resowing.

No injury by insects or by weeds.

Live stock.—Pastures good average. Stock throve well, and were free from disease. *Clip of wool*—Fair average.

ARRAN. *Wheat.*—None grown.

Barley.—None grown.

Oats.—30 bushels; variable as to quality; plenty of bulk; straw a good deal the worse of bad weather; grain about 37 lb. per bushel; seed sown, from 5 to 6 bushels.

Harvest begun eight days earlier than last year; lasted long, owing to bad weather.

Hay.—Cutting begun earlier than last year; crop bulkier, about 25 cwt.; seed not so heavy, about 24 lb. per bushel. *Meadow-hay*—Very little grown; rather more bulk; got well harvested.

Potatoes.—Yield less, say 7 tons; a good deal of disease in the early varieties, and more small tubers than last year.

Turnips.—Better crop than last year, where braird came quick; some second sowing, owing to fly; average about 16 tons.

Little injury by insects, except turnip-fly; above average on clay soil. Wild mustard very prevalent.

Live Stock.—Pastures above average during summer; did not stand well out; quality under average Stock not so well as previous year; did not thrive during September. Cattle and sheep free from disease, unless footrot very prevalent during summer. *Clip of wool*—Above average; with more weight.

LANARKSHIRE (Upper Ward). *Wheat.*—None grown.

Barley.—None grown.

Oats.—A good crop, but deficient in quality; 36 to 42 bushels; 5 to 6 bushels sown.

Harvest was slightly earlier than usual, in the end of August, and in some districts lasted till the middle of October. Little corn was secured in good order, and even up to end of January quality inferior.

Hay.—The quantity and quality of the hay crop was very good; from 2 to 3 tons, or at least double that of the preceding year. *Meadow-hay*—A much larger crop than last year; yielding from 2 to 2½ tons.

Potatoes.—About the same as last year; averaging from 6 to 8 tons; disease extensive in Regents, and in other earlier sorts to a lesser degree; in some cases almost useless; Maincrops and Sutton's Abundance seem favourites.

Turnips.—About 25 to 30 tons, same as last year; when sown in end of May had in some cases to be resown; the braird failing from the dry weather.

Less damage by insects than usual. Where finger-and-toe was present it was destructive. *Weeds*—About the same as usual, though a little more prevalent in the end of the season, owing to the wet weather.

Live Stock.—Pastures much superior to the preceding year. Stock throve very well. Cattle and sheep were practically free from disease, although a few cattle suffered from stomach staggers, and a considerable death took place among hogs from sickness in the end of the year. *Clip of wool*—The quality of wool was first-class, and quantity considerably above the average.

LANARKSHIRE (Middle Ward). *Wheat.*—40 bushels; good quality where crop was not laid and secured previous to weather breaking during harvest, otherwise poor quality and much wasted; straw bulkier than last year, 2½ tons; seed 3 to 4 bushels. On 25th July a gale of wind and rain from east sorely laid all crops, which made cutting very difficult, and wasted many acres.

Barley.—Little grown.

Oats.—35 to 40 bushels; same remarks apply to this crop as to wheat; straw bulkier, but much spoiled with wet weather, 2 tons; seed sown, 4 to 5 bushels.

Harvest ten days later, but much protracted by very wet weather, and would last in some cases ten weeks.

Hay.—Ryegrass, heavy crop, 2 to 2½ tons; well got on the whole, although there was one week's rain in middle of haymaking. Timothy, heavy crop, 2½ to 3 tons; fine quality. *Meadow-hay*—Average crop, and rather better secured.

Potatoes.—2 tons heavier than last year; yield, Sutton's Abundance, 7 to 8 tons; Gastons, 9 tons; Maincrops, 8 to 9 tons, dressed potatoes. Gastons, only new variety planted, heavy cropper, but a lot of waste in them; not much disease, save in Regents, but few planted.

Turnips.—Heavy crop; brairded well; no resowing; swedes, from 25 to 33 tons; yellows, up to 26 tons.

Potato and turnip crops injured by crows, but no injury from insects. No injury from weeds, but where the cereal crops were lodged by the gale of 25th July, crows and pigeons were very sore on them.

Live Stock.—Pastures did well, and Stock throve well; a little scarce in June, but abundant afterwards. No disease. *Clip of wool*—Average.

LANARKSHIRE (Lower Ward). *Wheat.*—44 bushels; quality better than last year; 4 bushels for seed.

Barley.—None grown.

Oats.—42 bushels; quality better than last year, but large quantity spoiled with bad harvest.

Harvest about ten days earlier.

Hay.—2 tons; good quality; some spoiled with wet weather. *Meadow-hay*—Quite as good as last year.

Potatoes.—7 tons. A lot of disease in Sutton's Abundance; it started in August. Some new varieties did very well, and no disease.

Turnips.—25 tons, and good quality; they brairded unevenly, but only one sowing required.

Live Stock.—Pastures of average growth and quality with last year. Stock throve very well, and were free from disease. *Clip of wool*—No wool in this district.

RENFREWSHIRE (Upper Ward). *Wheat.*—Very little grown; a good crop; yield, about 40 bushels; seed, 3 bushels.

Barley.—None.

Oats.—From 36 to 42 bushels; quality deficient, but large bulk of straw; seed, 5 bushels.

Harvest began at the end of August. Excellent weather till the 8th of September; afterwards crops were very much damaged.

Hay was a good crop and of medium quality; about 2 tons. *Meadow-hay*—Average crop.

Potatoes.—Average crop; from 7 to 10 tons; very little disease; no new kinds; mostly Maincrops planted.

Turnips.—Good crop, from 18 to 30 tons; brairded well.

No insects. Weeds were not troublesome.

Live Stock.—Average growth of pasture. Stock did fairly well. Cattle and sheep free from disease. *Clip of wool*—Average.

RENFREWSHIRE (Lower Ward). No wheat or barley grown.

The oat crop was the best that has been known for many seasons, and had favourable weather been experienced to harvest it, both grain and straw would have exceeded the average considerably. The crop was ready to cut about the usual time, but the wet weather, and at times entire absence of wind, in the latter part of August and in September, delayed securing the crop and encouraged sprouting in the stooks, thereby causing serious damage and loss, the result being that the straw was of inferior quality, and grain dressed badly. The yield of grain averaged from 24 to 36 bushels.

Ryegrass was above an average crop, and the season was very favourable for securing it, and it was fairly well mixed with clover. The yield would be from 22 cwt. to 2 tons. *Meadow-hay* was more productive than last year, and was secured in excellent condition.

The potato crop was good, yielding about the same as last year—5½ to 6 tons; and disease was not so prevalent except in the older varieties, such as Regents. Some new varieties were planted—Up-to-date, Gartons, and Queens, which are favourably spoken of.

The turnip crop was excellent, and the season was favourable to it throughout. No second sowing was necessary, and the open weather during the month of November, the crop having well covered the ground in the earlier part of the season, added greatly to its bulk and weight. Swedes were of very fine quality. The weight of the crops varied from 15 tons to 30 tons, the heaviest crops being in the more favourable localities, where the soil is deep and the land at a moderate height above sea-level.

Insects were not observable, and the turnip-fly caused little or no inconvenience.

Live stock did fairly well, and pastures came away, grass being more abundant than last year. No disease has troubled the flocks and herds.

The rainfall did not reach the average (60 inches), being during the year 52·59 inches against 50·13 in the previous year.

ARGYLLSHIRE (District of Oban). No wheat or barley grown.

Oats.—30 to 48 bushels; quality good, much the same as last year; straw good, but spoiled by wet harvest; seed from 5 to 6 bushels.

Harvest began much as usual; delay in finishing owing to rain in end of August and September; rain every second or third day; stooks did not dry for leading.

Hay.—Better than last year, say 1½ ton. *Meadow-hay*—Much the same as last year, but earlier cut, say 1½ ton.

Potatoes.—Say 4½ tons; not much disease showed during harvest.

Turnips.—Much better than last year, say 15 tons; brairded well; one sowing.

No injury by insects. Much Stinking Willie in pasture. Road authorities do not cut thistles on roadside; they are spreading.

Live Stock.—Pastures over average. Stock throve very well, and were free from disease. *Wool*—Clean clip; full average crop.

ARGYLLSHIRE (District of Lochgilphead). No wheat or barley grown.

Oats.—About an average quantity; quality not so good, being badly injured by wet weather; about 30 bushels; seed sown, 6 bushels.

Harvest began about the usual time.

Hay.—Quantity similar to last year; about 2 tons; quality good. *Meadow-hay*—More; a very heavy crop.

Potatoes.—Yield similar to last year; about 6 tons; no disease except in the Champion variety.

Turnips.—Quality and weight better than last year; 24 tons 15 cwt. (an average acre was measured and weighed); brairded well; only one sowing required.

No injury by insects. Not more than usual by weeds.

Live Stock.—Pastures of average growth and quality with last year. Stock throve very well, and were free from disease. *Wool.*—Good quality, and an average clip.

ARGYLLSHIRE (District of Kintyre). *Wheat.*—None.

Barley.—What was early secured was equal, both as regards quantity and quality, to the crop of 1895; about 32 bushels.

Oats.—Better crop both of straw and grain; yield about 40 bushels.

Harvest began at usual time, but was protracted to an exceptional extent on account of long-continued rains; would be about one month longer in finishing than usual.

Hay.—Crop heavier, also clover; 1½ to 2 tons. *Meadow-hay*—More productive, and quality good.

Potatoes.—Less; about from 4 to 5 tons; disease, not much.

Turnips.—Same nearly as last year; brairded well; one sowing only.

Live Stock.—Pastures of average growth and quality with last year. Stock throve well, and were free from disease. *Clip of wool*—About an average, and excellent.

ARGYLLSHIRE (Islands of Islay, Jura, and Colonsay). *Wheat.*—None grown.

Barley.—Very little grown.

Oats were a good crop, but have not threshed well, owing to prolonged wet and stormy weather during harvest causing the best of the grain to be lost; there is, therefore, less grain per acre than last year, and it is also much lighter per bushel. The bulk and weight of straw compares favourably with last year.

Harvest commenced about the usual time, but the crop was not all secured until fully a fortnight later than usual.

Hay.—This was a fair average crop, and on the whole was well secured. *Meadow-hay*—Rather more productive.

Potatoes.—The crop was much inferior both in quantity and quality to last year; disease was not very general, although in some cases nearly half of the crop was destroyed; in early potatoes it showed in July, and in the later varieties towards the end of August.

Turnips.—The crop brairded well, and with few exceptions only one sowing was necessary. There was a fair average crop.

The injury by insects was not greater than usual. Not more than usual by weeds.

Live Stock.—Pastures of average growth and quality with last year. Stock throve, and cattle and sheep were fairly free from disease. *Clip of wool*—Was rather better than an average, both in quantity and quality.

ARGYLLSHIRE (District of Inveraray). No wheat or barley grown.

Oats grew well, but in many cases wet stormy weather came on before much of it was shorn, and very little saved. The crop was very much damaged by storm and vermin.

Harvest began much about the usual time; seed, from 5 to 6 bushels; returns vary little in many cases.

Hay.—A fair crop and well secured; average about 23 or 24 cwt. *Meadow-hay*—About same as last year; a good crop and pretty well saved, except the latest.

Potatoes.—Not quite so good as crop 1895, nor quality so good; about 9 tons.

Turnips.—Very good and sound; in several cases above 30 tons.

Very little injury by insects. Yellow mustard, and in green crop flowering nettle, were somewhat troublesome.

Live Stock.—Pastures of average growth and quality with last year. Stock throve well, and were free from disease. *Clip of wool*—As good as usual.

DUMBARTONSHIRE. *Wheat.*—About 28 to 32 bushels; quality good; good season for wheat; 2½ to 3 bushels seed sown.

Not a barley district.

Oats.—High land parishes about 30 bushels; low land about 45 bushels; quality good where early harvested, but later much damaged by weather, and some not in till October; seed sown, high land parishes, 5 bushels; low land, 3½ bushels.

Harvest began—best land, a few days earlier; remainder, fully a week later than usual..

Hay.—1½ to 2 tons, according to district; quality good, and well got. *Meadow-hay*—Better than last year, and well got.

Potatoes.—Similar to last year; 7 to 8 tons; not much disease. New varieties, Gartons and Tunberry Maidens; latter very early, particularly fine quality, a good cropper, and free from disease.

Turnips.—20 to 25 tons; quality good; no resowing.

No injury by insects or weeds.

Live Stock.—Pastures fully equal to last year. Stock throve well, and were free from disease. *Clip of wool*—Average.

STIRLINGSHIRE (Western District). *Wheat.*—None grown in district.

Barley.—Little grown in district; 3½ bushels seed sown; yield, 36 bushels.

Oats.—4 to 5 bushels seed sown; yield, 30 to 40 bushels, according to the quality of the land; a fine crop as a whole.

Harvest commenced under favourable conditions three weeks earlier than in 1895; but unfortunately the weather broke before the crop could be secured, and continued broken for nearly four weeks. As a result, both grain and straw suffered considerably.

Hay.—Average crop of fully 1½ ton; finely mixed with clover, and in the main secured in good condition. Some of it was on the ripe side before being cut, owing to enforced delay from unfavourable weather, and the usual loss of seed in such circumstances followed. *Meadow-hay*—Much better crop than 1895; good quality, and well saved.

Potatoes.—Good yield of 9 tons or thereby; of fine quality; not much disease, and no particular new sorts planted.

Turnips.—Heavy crop of from 26 up to 40 tons, of well-shaped hardy bulbs, stored in dry weather, and keeping specially well; only one sowing required.

No injury from fly, and very free of weeds.

Live Stock.—Pastures good generally. The cattle and sheep did well, and there was a fine crop of good healthy lambs. Cattle and sheep free from disease. *Wool*—There was a fair average clip of good wool.

STIRLINGSHIRE (Eastern District). *Wheat.*—3½ bushels seed produce 40 bushels; quantity of grain and straw about an average; of good quality; acreage sown, less than last year.

Barley.—3 bushels seed produce 32 bushels Carse, 28 bushels Dryfield; grain and straw very much better than last year.

Oats.—5 bushels seed produce 36 bushels; first put-in grain of good quality, but later very inferior, both grain and straw.

Harvest began earlier than last year, but a bad finish.

Hay.—Carse, 2 tons; Dryfield, 33 cwt.; fully better than last. *Meadow-hay*—Very good crop, and fairly well secured.

Potatoes.—About 6½ tons; early varieties (especially Regents) diseased, others free; no new varieties.

Turnips.—About 16 tons; long in brairding; in some cases second sowing; too dry.

No more damage done by insects than usual. On clay land mustard and tussilago did most damage.

Live Stock.—Pastures had plenty of growth, and fairly dry season. Stock did well. Cattle and sheep free from disease. *Wool*—An extra large clip of wool on account of open winter.

CLACKMANNANSHIRE. *Wheat.*—48 bushels; straw about an average; grain and straw good; seed sown, 4 bushels.

Barley.—46 bushels; straw heavy and lodged; grain good; straw not so good by lodging; seed sown, 4 bushels.

Oats.—40 bushels; straw variable; grain and straw damaged by wet harvest; seed sown, 5 bushels.

Harvest two weeks earlier.

Hay.—A good crop; well mixed with clover; quantity, 1 ton 8 cwt.; slightly damaged with rain.

Potatoes.—About the same yield of earlies; 4 tons; half disease. Later varieties, 5 tons; little disease; quality good.

Turnips.—A good crop; 25 tons; early sown ones stiff to grow; very little second sowing.

Very little damage done by insects. Annual weeds were a little difficult to keep down on account of showery weather and warm season.

Live Stock.—Pastures a full average; quality good. Stock throve well. Cattle and sheep free from disease. *Clip of wool*—A fair average.

FIFESHIRE (Eastern District). *Wheat.*—40 bushels; quality good; straw, 1½ ton: 3 bushels seed sown.

Barley.—38 bushels; good crops, but quality much damaged by the wet harvest; straw, 1¼ ton; seed sown, 3 bushels.

Oats.—40 bushels; crop better than last year; straw and grain very much damaged by the wet harvest; straw, 1¼ ton; seed sown, 4 bushels.

Harvest began a fortnight before the usual time, but was the worst and longest on record.

Hay.—2 tons; crop better than last year. *Meadow-hay*—Very little grown in the district.

Potatoes.—6½ tons; crop under last year; very little disease in Bruces and Maincrops, which are chiefly grown. Sutton's Abundance, Saxons, and Champions not largely grown; nearly half diseased.

Turnips.—Yellows, 14 tons; swedish, 18 tons. Crop better than last year; quality good; brairded well; almost no resowing.

No damage by insects. No damage by weeds.

Live Stock.—Pastures were of average growth and quality. Stock throve well, and have been free from disease. *Clip of wool*—Quality good; about an average.

FIFESHIRE (Middle District). *Wheat.*—34 bushels; the quality both of grain and straw was excellent; much superior to the crop of 1895 in quantity and quality; there would be 1½ ton of straw; the quantity of seed sown about 3½ bushels. It was thick on the ground, early ripe, and was harvested in good order.

Barley.—A full average crop; yield of grain about 37 bushels; weight of straw 24 cwt.; quality of grain very much deteriorated by the wet weather during harvest; much of it was stacked in middling condition, and the bulk of samples have been raw and far from dry.

Oats.—Good crop also; but again the quality both of grain and straw was very much damaged by rain. There was much sprouting in the stook, and a large proportion was stacked in rather damp condition. 44 bushels of grain, and fully 1¼ ton of straw; about 4½ bushels seed sown.

Harvesting of wheat commenced about middle of August; barley and oats would be a fortnight later; wheat was got in in good order, which cannot be said of the others. It was a most protracted harvest, lasting from 15th August to first week of October.

Hay.—Both quantity and quality superior to former year. It was well got, and was a heavy crop, well mixed with clover; about 2¼ tons. *Meadow-hay*—Scarcely any in the district.

Potatoes.—About equal to the crop of 1895, which may be styled a record one, say 5½ to 6 tons; a considerable amount of disease amongst the earlier varieties, and amongst Saxons, Sutton's Abundance, Giants, &c.; even Bruces are considerably affected; Maincrops, Up-to-Date, are clear.

Turnips are a full average crop; the crop brairded well; very little resowing. There is a very much larger breadth of swedes, which are a big crop, 22 tons; yellows are a fair crop, 16 tons. Finger-and-toe very prevalent; more than usually diseased, and so deteriorated in quality.

No injury by insects, with the exception of wireworms in turnip-fields; and the rooks in searching for the worms stripped bare a considerable number of acres in this district. Very little damage done by weeds.

Live Stock.—Pastures of fully average growth and quality. There was more food during summer, both for sheep and cattle, than during the summer of previous year. Stock throve very well. Both cattle and sheep have been free from disease; there have been a few isolated cases of anthrax. *Wool*—The quality of the clip was good, and the weight fully an average.

FIFESHIRE (Western District). *Wheat.*—42 bushels; quality very fine in all wheat secured before the weather broke, after that quality very much injured by wet; 30 cwt. straw, and from 3½ to 4 bushels of seed sown.

Barley.—48 bushels on all the finest coast lands, farther back on the inferior soils 34 bushels; straw very abundant; generally a very fine bulky crop, sadly spoiled by wet weather; 3 to 3½ bushels of seed sown.

Oats.—50 bushels on the finest soils; 36 bushels on the inferior; and oats all over a very fine crop, but, like the barley, sadly spoiled; 4 bushels of seed sown.

Harvest about a fortnight earlier than usual.

Hay.—Quality of the crop very fine; about 1½ ton. *Meadow-hay* is very abundant where the meadows are irrigated or manured.

Potatoes.—A much heavier crop than last year; on the finest lands about 7 tons of dressed potatoes, and on the back inferior lands 5 tons. A great deal of disease amongst the earlier varieties. Of new varieties Saxons and Gartons have been tried, and although good croppers, they lack quality.

Turnips.—The turnip crop is a fine heavy one all over, ranging from 35 tons down to 15, according to situation and quality of land. When swedes were sown too early they mostly went off with frost, and had to be resown with yellows; but when sowing did not begin till from the 15th to the 18th of May the braird was no trouble.

No injury by insects. Nothing more than usual by weeds.

Live Stock.—Pastures very much better. Stock throve well. Cattle and sheep free from disease. *Clip of wool*—Rather over average, and of good quality.

PERTHSHIRE (South-Western District). *Wheat.*—A good average crop of grain and straw; about 40 bushels to 42 bushels; seed, 4 bushels.

Barley.—Very fair crop; 40 bushels; weight, 52 to 56 lb.; seed, 3½ bushels.

Oats.—A very good crop; 44 bushels; weight, 42 lb. to 46 lb.; seed, 4 to 5 bushels.

Harvest.—Rather earlier than last year, but the later districts were much prolonged, and crop damaged by wet weather.

Hay.—About 1 ton 12 cwt.; quality good. *Meadow-hay*—Average crop pretty well got.

Potatoes.—Above an average crop; 8 to 10 tons; Regents more than half diseased; other varieties fairly sound; prices very low.

Turnips.—A good crop; 21 to 24 tons; crop brairded well; very little second sowing.

Not much damaged by insects. Crop not injured by weeds.

Live Stock.—Pastures grazed very much the same as last season; fairly well. Stock throve pretty well. Cattle and sheep entirely free from disease. *Wool*—Truly an average clip in both quantity and quality.

PERTHSHIRE (Coupar-Angus District). *Wheat.*—The average yield in this district will be considerably above that of last year, from 32 to 36 bushels; and the quality of both grain and straw also very good, especially where harvested before the rainy weather set in; seed sown, from 2½ to 3 bushels.

Barley.—This crop is a full average as to yield, from 36 to 48 bushels; but, with the exception of what was secured before the rainy weather, quality not so good; seed sown, from 2 to 3 bushels.

Oats.—This crop also a fair average as to yield, but with few exceptions both grain and straw very much damaged by wet before being harvested; seed sown, from 3 to 5 bushels.

Harvest began about a fortnight earlier this year, but was much delayed by a long continuance of wet weather.

Hay.—A fair average crop, better than last year, and the quality good, and yielding from 2 to 2½ tons. *Meadow-hay*—Little or none made in this quarter.

Potatoes.—The yield of the crop is considerably above that of last year, and the quality very good; but there has been a considerable amount of disease amongst Regents and Sutton's Abundance, and all the earlier sorts; average yield, from 2 to 10 tons.

Turnips.—This crop is a fair average, rather better than last year's crop, but a good many fields affected less or more by finger-and-toe; few second sowings had to be resorted to; average yield, from 15 to 25 tons.

There was some little damage to crops by wireworms, which were more than usually prevalent this year, owing to the very mild winter previous; and where such took place annual weeds grew up, damaging to some extent what was left of the crop.

Live Stock.—The pastures were very good during the whole season, and stock of all kinds throve well on them. Cattle and sheep have been comparatively free of disease during the past year. *Wool*—The clip was a good average one, and of good quality.

PERTHSHIRE (Strathearn District). *Wheat.*—Almost none grown; average crop, 35 to 38 bushels; 3 bushels sown.

Barley.—A good crop, fully above average; 40 to 45 bushels; 4 to 5 bushels sown; on account of the want of sunshine and heavy rainfall, not well coloured.

Oats.—An average crop; 35 to 45 bushels; straw short on lea-land, but good on red or turnip-land; a large area a good deal damaged by bad weather, and grain not so well coloured as usual, except lea corn.

Harvest about a fortnight earlier than usual, or about the same time as last year.

Hay.—A good deal above average; 2 to 3 tons; secured in good condition, with a large proportion of clover and a very abundant aftermath. *Meadow-hay*—A fully average crop, and well secured.

Potatoes.—Quite equal to last year in quantity; 7 to 10 tons; Regents partially diseased, other varieties less so.

Turnips.—An average crop; 15 to 20 tons; brairded well, and not much second sowing; grub and wireworm did some damage in some cases; finger-and-toe very prevalent over a large area; quality not equal to last year.

Little injury to crops by insects; damage less than usual. No injury by weeds; land in general clean and less subject to weeds.

Live Stock.—Pastures good—especially after beginning of June, when rain fell copiously—and of full average growth, but quality not equal to last year. Stock throve well, and were quite free of disease. *Clip of wool*—Good, and of average quantity and quality.

PERTHSHIRE (Highland District). *Wheat.*—Not grown.

Barley.—32 bushels; 53 lb. weight; sown, 4 bushels; straw fair; grain fair in quality.

Oats.—Lea oats, 42 bushels; clear land oats not so good, 39 bushels; sown, 4½ bushels. Harvest later and wet, and so coloured the grain.

Harvest earlier than last year, but late in getting in, in consequence of wet weather.

Hay.—As good as last year; 20 cwt., and well got; quality better than last year. *Meadow-hay*—Same as last year.

Potatoes.—5 tons; no disease; quality soft, and not so good as last year. No new varieties.

Turnips.—15 tons; quality soft; some finger-and-toe; brairded well; only one sowing required.

No injury by insects. Some weeds; no injury to crops.

Live Stock.—Pastures about same as last year. Stock throve well. Cattle and sheep free from disease. *Clip of wool*—Better than the average.

PERTHSHIRE (Dunkeld and Stormont District). *Wheat.*—Little sown.

Barley.—Good average crop; 36 to 40 bushels; straw fair; weight, 52 to 54 lb.; good colour where early and secured before the rain; very much damaged after the 1st of September; 4 bushels sown.

Oats.—A very good crop after lea, not so good on broken land; 36 to 40 bushels; weight, 40 to 44 lb.; very much damaged, both straw and grain, after the 1st of September; 5 bushels sown.

Harvest was early—two weeks earlier than usual; began about the middle of August; two weeks grand weather, then very wet.

Hay.—The crop was light owing to want of rain in May; about 1 ton 5 cwt.; well mixed with clover; very well secured. *Meadow-hay*—Little grown.

Potatoes.—Crop very good; about 7 tons; disease bad amongst Regents, and some among Suttons; Bruce and Maincrops clear. No new varieties. Disease commenced about the 1st of August.

Turnips.—A good crop; 20 to 24 tons. They did not braird well owing to want of rain, more especially swedes; some second sowing had to be done, and others did not come till rain came on the 4th of June.

No damage, less than usual. Crops not injured by weeds to any extent.

Live Stock.—Pastures were short in May, but came away in June, and continued good. Stock throve fairly well. Cattle and sheep free from disease. *Wool* was an average clip and good quality.

FORFARSHIRE (Western District). *Wheat.*—5½ quarters; 44 bushels; grain good where got well; seed, 3 bushels.

Barley.—40 bushels; where got before the rain, quality good. Most of it was got in bad condition, much discoloured, and a good deal of it grown in the stook during a very close wettish fortnight, which was also very warm.

Oats.—From 32 to 60 bushels; where got before the bad weather mentioned above, quality of both grain and straw good; but there is a lot of bad straw and oats in this district.

Harvest began ten days earlier.

Hay.—1 ton 15 cwt.; of first-class quality. I think there were a few heavier crops in the district, but not many. *Meadow-hay*—Not a quotable crop in this district.

Potatoes.—10 tons; disease commenced in August with earlier sorts of potatoes, but late varieties escaped wonderfully, scarcely any damage being done to them.

Turnips.—The crop in this district is, a good with a bad field, occasionally with finger-and-toe, say from 20 to 35 tons. The braird was good where not sown too early, but a good many early-sown fields had to be resown.

Crops not injured by insects to any extent—I should say not more than usual, anyway. The crops were not injured by weeds; where they received reasonable attention, I should say less than usual.

Live Stock.—The pastures were good in growth as well as quality. Stock did very well, and were free from disease. *Clip of wool*—Quality good, I think slightly over an average.

FORFARSHIRE (Eastern District). *Wheat.*—30 to 40 bushels; grain, where not discoloured in stook and sprouted, very good; straw above average; seed sown, from 3 to 4 bushels.

Barley.—36 bushels; quality middling; straw abundant; mostly damaged in stook; 4 bushels sown.

Oats.—40 to 44 bushels; straw abundant; much damaged by wet weather in harvest; quality inferior; quantity sown, 4 to 6 bushels.

Harvest early (17th August); continuous wet weather till all got in, about 1st week of October.

Hay.—Crop 30 to 40 cwt.; better crop than last year, but deficient in clovers. *Meadow-hay*—None in this district.

Potatoes.—Crop, 12 tons; Regents and Champions much diseased—other varieties free from disease; quality excellent.

Turnips.—24 to 28 tons; blanky, but very little canker.

No injury by insects. No injury by weeds.

Live Stock.—Pastures not of average growth and quality with last year; too dry first part of season, then too wet. Stock throve well, and were free from disease. *Clip of wool*—Not so good as last year, but about an average.

ABERDEENSHIRE (Buchan District). *Wheat.*—Not grown in this district.

Barley.—There were fair crops of barley and bere this year, both as regards grain and straw; but unfortunately not much of the crop was secured before the wet weather set in, hence great differences of samples and weights. Weight, from 50 to 54 lb.; quantity sown, from 3 to 4 bushels.

Oats had the appearance of being the best crop that has been seen for a long time; but the gale on the night of the 18th September, and the strong winds that followed along with the heavy rains, laid and twisted the crops so badly as to make it most difficult to take the crop off the ground. A great quantity of the best of the grain was shed in taking about the crop, causing a great deficiency in the out-turn besides what it would have been had there been a good harvest. The straw is of inferior quality, and the grain in many cases greatly discoloured. Weight of grain from 38 to 42 lb. per bushel; quantity sown, about 6 bushels; out-turn, about 36 bushels.

Harvesting was general about the beginning of September, but wet weather setting in soon after prevented the work getting on, and especially after the gale of the 18th September. The start was made about a week earlier than usual.

Hay.—The crop was not more than an average one, but of very fair quality and well secured. *Meadow-hay* is not much cultivated in this district.

Potatoes.—The yield was from 5 to 6 tons; a very good crop, of good quality, except in a few cases where there was a little disease.

Turnips.—Swedish would weigh from 20 to 24 tons, and yellows 18 to 22 tons. The crop came away well at first, and continued so till the wet weather set in. Since then they have not bulbed so well as the appearance of the crop in the early part of the season would have led one to expect. Very few cases of resowing.

No damage done by insects. Weeds began to grow after the wet weather set in, but no damage was done.

Live Stock.—The pastures were fully the average for growth, but the quality was not so good during the end of the season owing to the excessive rains. The stock did fairly well on the grass. Cattle and sheep were free from infectious diseases. *Clip of wool*—The clip was rather better than last year, but the price is still low.

ABERDEENSHIRE (District of Formartine). *Wheat.*—None grown.

Barley.—Crop last year 33 bushels, this year 40 bushels; straw 20 per cent more than last year; seed sown, 4 bushels.

Oats.—Crop last year 37 bushels; this year 44 bushels; straw 20 per cent more than last year; seed sown, 5½ bushels, but on higher lands 6½ bushels.

Harvest about one week earlier than the usual time, but the weather so bad that the extra yield of grain and straw over last year was all lost through shaking, sprouting, and rotting of the crop.

Hay.—"Seeds"—*i.e.*, ryegrass and clover mixed—are cut for hay, and yielded last year 1 ton 5 cwt.; this year 1 ton 15 cwt.; quality excellent. *Meadow-hay*—Practically none grown here.

Potatoes.—Last year 6½ tons; this year 4 tons; much disease.

Turnips.—Crop last year 16 tons; this year 20 tons; of better quality, but some finger-and-toe; crop brairded fairly well, although some resowing was necessary. Cattle have not made the usual progress on turnips owing to bad straw.

The turnip-fly checked the braird of early sowings. Usual injury caused to crops by couch-grass, knot-grass, and skellach.

Live Stock.—Pastures good both seasons in growth and quality. Stock throve fairly well, considering the wet weather. Cattle and sheep free from disease.

Aberdeenshire (District of Garioch). *Wheat.*—None grown in the district.

Barley.—The crop was a good average, but the quality was in most cases deteriorated by long exposure to wet in the stook, which caused a good deal of the grain to sprout; 40 bushels, weighing 55 lb. per bushel, would be about the average yield; 4 to 4½ bushels sown.

Oats.—The crop after lea was generally satisfactory, being thick on the ground and fairly bulky; but that after turnips was light, as during the dry weather in May and beginning of June this part of the crop made little progress. The weather during harvest was exceptionally wet, most of the crop being stacked in bad order, so that the average of about 38 bushels, of 40 lb. per bushel, is less than would have been recorded in more favourable circumstances. 6 to 7 bushels sown.

Harvest commenced about the last week of August, a usual time for this district.

Hay.—Compared with last year the crop would show an improvement; but it was still far from being a good crop, being very deficient in clover. *Meadow-hay*—None grown.

Potatoes.—The yield would be rather less than last year. The earlier and garden varieties suffered from disease, but the later sorts were generally sound.

Turnips.—The autumn months being cold and wet, swedish turnips, which looked well during the summer, are not weighing up to expectation; but the crop of yellow turnips is decidedly heavier than last year, the quality also being good. Early-sown turnips in some cases did not come up well, and had to be resown, attributed mostly to the dryness of the soil. The weight of swedish would average 18 tons, and yellows 21 tons.

No injury from insects, and the season being suitable for cleaning the ground, there was no injury to crops from weeds.

Live Stock.—The pastures, both as regards quantity and quality, were quite as good as usual; and stock did fairly well, especially in the first half of the season. They have been quite free of disease. *Clip of wool*—About an average.

Aberdeenshire (Strathbogie District). *Barley.*—The sowing season was early, and there was an unusually large extent of barley sown. The early period of the growing season was satisfactory, but later on the weather turned colder and rainy. Much of the crop was laid, and as a consequence ripening was unsatisfactory. The harvest commenced about the usual time, but was prolonged on account of persistent heavy rains. Much of the grain was greatly spoiled in colour, and being soft, did not weigh well in the bushel; and a considerable quantity is below the standard of 54 lb., and the quantity is very limited which exceeds 55 lb.

Oats.—Similar remarks apply to the oat crop as far as sowing, growth, and reaping is concerned. Unfortunately a severe storm of wind passed over Strathbogie a little after reaping had commenced, and caused a heavy loss by shake. In many cases the shake would amount to 2 quarters.

Hay.—The crop was rather below the usual weight; it was well mixed with clover, but there was great difficulty in getting it properly cured, owing to rainy weather.

Potatoes were a good crop, and of fine quality generally; there was little of any disease. No new varieties; but Maincrops are giving so much satisfaction that they are supplanting the old Champion, once so popular as a heavy cropper and disease-resister.

Turnips are a magnificent crop, and there has not been any trouble in the brairding or from fly, but there are a few complaints of finger-and-toe. Farmers are now giving a smaller quantity of artificial manures to the root-crop, and the change does not appear to have an injurious effect on the weight or quality of the crop, while the expense is considerably less.

There has been no special injury caused by either insects or weeds.

Live stock.—Pastures generally were very good during the earlier part of the season; but when the weather became colder and abnormally wet as the season advanced, grass did not do so well, and stock did not thrive so well as could have been desired. Both cattle and sheep have kept free of disease. *Wool*—The quality of the clip was fair only, and the average weight was considered to be less than on the previous year.

Banffshire (Lower District). *Wheat.*—None grown here.

Barley.—A good crop; 34 to 44 bushels, of good weight and colour; seed sown, 3 to 4 bushels.

Oats.—Good average crop both as regards grain and straw; 40 to 50 bushels; seed sown, 4 to 6 bushels.

Harvest began about the middle of August, being nearly a fortnight earlier than usual.

Hay.—Much heavier crop than last year, and better quality; 30 to 40 cwt.

Potatoes.—Fair average crop; not nearly so good as last year; quality good; 5 to 7 tons; very little disease; Maincrop with good results.

Turnips.—20 to 36 tons; more than an average crop of good quality; brairded well; very little second sowing done.

No damage from insects. No damage by weeds.

Live stock.—Pastures fully up to last year's growth and quality. Stock throve well, and were free from disease. *Wool*—Average clip.

Banffshire (Upper District). *Wheat.*—None.

Barley.—3$\frac{6}{8}$ bushels; grain better in quality; straw more plentiful; part bad quality.

Oats.—4 quarters; better quality; straw more plentiful, and good.

Harvest began before usual time, about ten days.

Hay.—Crop short; quality indifferent; in quantity about 1 ton.

Potatoes.—Much better than last year; about 4 tons; not much disease.

Turnips.—Crop better than last year, and quality better; weight about 15 tons; braird very good; no second sowing.

No injury by insects or by weeds.

Live Stock.—Pastures about an average. Stock throve fairly well. Cattle and sheep free from disease. *Clip of Wool*—Good; quality over an average.

MORAYSHIRE (Lower District). *Wheat.*—Quantity sown still growing less, but favourable turn in prices has led several people who had given up sowing wheat to put down a bit of it for 1897. Crop of 1896 good; would be up to 40 bushels. Quality of grain and straw good; about 4 bushels usually sown.

Barley.—Very bulky crop; much lodged, but better filled than in either of the two previous years. Yield varies from 32 to 56 bushels, and would probably average 44 bushels or closely up to it. Weight better than in 1894 and 1895, varying from 54 to 57 lb.; much of it 55 lb. to 56 lb. Quality and colour not so fine as when crop is lighter; 3 to 4 bushels sown.

Oats.—Very large crop; nearly all lodged, some of it very badly. Straw a good deal spoiled, but grain fairly good, a considerable proportion of it excellent. Yield would be 50 bushels; quantity sown, about 4 bushels.

Harvest began about 17th of August. Many finished within a month or thereby; but weather broke very badly during September, and October was a wet month also. Even on some large farms in the low country November was well begun before all the crop was secured. Weather was cold however. Damage from either rotting or sprouting less than expected.

Hay was a fairly good crop; average about 1½ ton; quality fairly good, but in some cases spoiled a good deal in making; clover very strong where it held, but many parts of fields entirely without it. *Meadow-hay*—Scarcely any.

Potatoes.—Big fine crop; not quite so bulky as in 1895, but healthy, except in round earlier sorts. Return would be 8 tons in good land well cultivated; all over, average would be about 6 tons.

Turnips touched with canker where land had any tendency to dampness, and where rotation is short. Some fields suffered badly in this way; crop excellent, however, where it had a fair chance. Like last year, would go up to 24 tons, in some cases considerably above it.

No injury by insects. The season was so wet after the middle of July that weeds were difficult to keep in check.

Live Stock.—Pastures were particularly good, especially towards the end of the season—quite as good as last year. Stock throve fairly well while weather was dry in May and June; not so well afterwards, although grass was more abundant. Cattle and sheep free from disease. *Clip of Wool*—About average, rather above.

NAIRNSHIRE. *Wheat.*—None grown.

Barley.—Say 4 to 4½ quarters; not quite so much in quantity, and quality a good deal spoiled owing to continuance of wet in harvest; sown, about 4 bushels.

Oats.—About 5 quarters; same remarks; 5 to 6 bushels.

Harvest began about usual time.

Potatoes.—Fully average crop; a good deal of disease in earlier sorts.

Turnips.—16 to 20 tons; brairded well; some resown; good deal of finger-and-toe.

No injury by insects.

Live Stock.—Pastures of average growth and quality with last year. Stock throve very well, and were free from disease.

INVERNESS-SHIRE (District of Inverness). *Wheat.*—Only some 6 acres sown in the county; crop an average one.

Barley.—Average crop as regards quantity, but the wet protracted harvest operations, made quality and colour deficient except on a few early farms. The average quantity sown, from 3 to 5 bushels; yield from 24 to 50 bushels, according to soil and condition of land.

Oats were an abundant crop, and promised to be a very satisfactory one both as regards quantity and quality, but the heavy rainfall deteriorated the quality of straw and grain considerably; average yield, from 25 to 55 bushels; sown, 3 to 6 bushels.

Harvest began about the usual time. With the exception of a few farms, which were earlier than last year, unsettled weather retarded operations considerably, but little damage was done by sprouting.

Hay.—There was an excellent crop on good land; average yield, about 2 tons; quality much superior to last season's return. *Meadow-hay*—Very little grown.

Potatoes.—There was a less breadth grown than in 1895, but the yield was fully an average one, and the quality good. A few varieties planted, such as Maincrop, Up-to-date, &c.

Turnips were a good crop, being a full average on the best soils; well formed, and less ravages from finger-and-toe than usual; yield, from 15 to 30 tons.

There was no injury to crops from insects. Couch-grass and wild mustard prevailed similar to former years.

Live Stock.—Pastures full average. Stock throve well upon grass, notwithstanding the damp autumn. No disease of any kind has appeared for four years. *Wool*—Average clip.

INVERNESS-SHIRE (Island of Skye). *Wheat.*—None grown.

Barley.—Very little grown.

Oats.—Good yield, but damaged by rain in harvesting.

Harvest began at the usual time.

Hay.—Much the same as last year as to clover and ryegrass. *Meadow-hay*—Much the same as last year.

Potatoes.—The crop very deficient; disease to a small extent began early; not aware of any new varieties planted.

Turnips.—The crop was good; from 20 to 30 tons; brairded well; no second sowing.

Not aware of any damage by insects. Not more than usual by weeds.

Live Stock.—Pastures equally good. Stock throve very well. Cattle and sheep entirely free from disease. *Clip of wool*—Good; better than the former year.

INVERNESS-SHIRE (Lochaber District). *Oats.*—32 bushels grain, of inferior quality; straw more plentiful; quality inferior; 6 bushels

Harvest began about usual time.

Hay.—1½ ton; quality good. *Meadow-hay*—Less productive than last year.

Potatoes.—The yield was about 5½ tons; one-twentieth diseased; no new varieties planted.

Turnips.—Weight of crop about 20 tons; crop brairded well; no second sowing required.

Crop was in no way injured by insects. Crop was not damaged by weeds.

Live Stock.—Pastures were below average growth and quality. Stock did not thrive quite so well as usual. Cattle and sheep free from disease. *Clip of wool*—A full average.

ROSS-SHIRE (Western District). *Wheat.*—None sown.

Barley.—None sown.

Oats.—3½ quarters; good average crop; 6 bushels sown.

Harvest began about the usual time.

Hay.—Quantity about 3 tons; quality good. *Meadow-hay*—More productive.

Potatoes.—3 tons less than last year; about one-half gone with disease, which appeared about the beginning of July; no new varieties planted.

Turnips.—Weight about 15 tons; brairded well; only one sowing required.

No injury by insects or by weeds.

Live Stock.—Pastures of average growth and quality with last year. Stock throve well. Cattle and sheep free from disease. *Clip of wool*—Good; fully an average.

ROSS-SHIRE (Dingwall and Munlochy District). *Wheat.*—Number of acres grown still very few; quality and quantity average; seed sown, about 4 bushels.

Barley.—Quantity quite average, say 4 bushels; quality average, but in some cases much spoiled with the weather in harvesting; straw average in quantity and quality; seed sown, say 4 bushels.

Oats.—Quantity full average, say 44 bushels; quality also average, but also affected by weather; straw abundant and good; seed, 4 to 5 bushels.

Harvest began on 17th August, about usual time; was very tedious, owing to continuous falls of rain.

Hay.—Quality better than last year; quantity about the same, say 1¼ tons. *Meadow-hay*—None grown.

Potatoes.—Yield better than last season, say 7 tons; quality only fair; early varieties much diseased, say one-half; not many new varieties tried; disease appeared in end of July.

Turnips.—Average. Swedes 22 to 24 tons; yellows again variable, say 12 to 15 tons. Finger-and-toe still to be seen; crop brairded well, and almost no resowing.

Not more than usual damage by insects or weeds.

Live Stock.—Growth of pastures very abundant till early in August, but of little feeding value after that, owing to rains. Stock throve well early, but made very little progress after 12th August. Cattle and sheep free from disease. *Clip of wool*—Quality good; average.

ROSS-SHIRE (Tain, Cromarty, and Invergordon District). *Wheat.*—Better yield; much better quality; very little sown in county; 40 bushels.

Barley.—Better than average, but dark in colour; 36 to 38 bushels.

Oats.—Bulky crop; threshing out well; 46 to 48 bushels.

Harvest.—A week earlier in early districts; usual time in later districts.

Hay.—Heavier crop all over; 27 to 30 cwt. *Meadow-hay*—None grown in district.

Potatoes.—Not so heavy; 6 to 6½ tons; no disease; no new varieties planted to any extent.

Turnips.—Not so heavy as last year; swedes 21 tons, yellows 17 to 28 tons; brairded well; no second sowing required.

Crops not injured by insects. Wet season. Crops, especially turnip, a good deal injured with weeds.

Live Stock.—Pastures more than average growth; quality not so good owing to excessive moisture. Stock healthy, but did not lay on condition owing to wet. Cattle and sheep quite free from disease. *Clip of wool*—A little over average in weight and quality.

SUTHERLANDSHIRE. *Wheat.*—None grown.

Barley.—30 to 32 bushels; below average, both in quantity and quality; damaged in harvesting.

Oats.—40 to 42 bushels; quantity above average, both grain and straw; but 2 to 3 lb. below average weight, and both grain and straw damaged by continuous wet at harvest-time.

Harvest later, ten days to a fortnight.

Hay.—About average; 25 to 30 cwt. *Meadow-hay*—Very little grown.

Potatoes.—Average yield; about 4 tons; disease in places, but not to a large extent.

Turnips.—A very variable crop, and finger-and-toe prevailed largely; crop, on average, 15 to 20 tons; crop brairded well, and generally one sowing only required.

No injury by insects. The wet season favoured weeds, and latter end of summer and autumn could not be kept under. A great deal of foul land.

Live Stock.—Pastures of average growth and quality with last year. Stock early part of season throve fairly well, but too wet afterwards. Cattle and sheep free from disease. *Clip of wool*—Slightly over average.

CAITHNESS-SHIRE. *Wheat.*—Not grown.

Barley.—About 30 bushels; seed sown, 4 bushels; quality of grain and straw very inferior, owing to an almost sunless summer and wet season.

Oats.—For above reason crop of oats large, but quality inferior; grain weighing from 36 to 38 lb. per bushel; quantity about 32 bushels, with any quantity of immature straw.

Harvest about ten days later.

Hay.—A good crop our last season. *Meadow-hay*—Owing to continuous wet weather only in part cut, and secured generally in bad order.

Potatoes.—A fair crop of some 6 tons; free from disease, but inferior in quality.

Turnips.—Nearly one-half the crop destroyed by finger-and-toe, some fields literally with no crop; the average on the best land some 20 tons; an excellent appearance up till after singling, since then the crop has been gradually disappearing.

No injury by insects. Weeds very prevalent, and great difficulty has been the rule all summer in checking their growth. Thistles were most abundant, covering the lea-fields like primitive forests.

Live Stock.—Cattle and sheep did badly all the grazing season, the grass not being matured, although abundant. There has been little or no sign of disease; but owing to the abnormally wet season fears are entertained of rot in sheep. This may be without foundation, owing to the low temperature, which would check the development of the embryo, and the roughness of the pasture would prevent sheep eating bare. *Wool*—Average clip.

ORKNEY. *Wheat.*—None grown.

Bere.—The average yield was about 30 bushels, weighing about 46 lb.; the seed sown is from 3½ to 4½ bushels.

Oats.—Fair bulk, but light in weight; average yield about 28 bushels, weighing about 37 lb.; straw is above an average bulk, but owing to a good deal of the crop being laid and the bad harvest weather, it is not of extra quality; seed sown, 4 to 6 bushels.

Harvest commenced towards the end of September, being about a fortnight after the usual time, and lasted for seven weeks, being the longest and worst harvest for many years past.

Hay was a fair crop, but less than last year; weight about 23 cwt.

Potatoes are, owing to the wet season, a short crop, with a good deal of disease; scarcely half the bulk of last year; average about 3½ tons.

Turnips brairded well, but the wet weather all autumn checked growth, and the crop is both light and diseased, being fully a third less than last year; average about 7½ tons.

Little damage done by insects.

Live Stock.—The pastures were good all season, and stock throve fairly well. With the exception of a few cases of staggers in the spring, cattle have been free from disease. *Wool*—Was an average clip.

SHETLAND (Island of Unst). No wheat grown.

Barley.—Only small patches of barley grown here by crofters; straw last year was light, but grain above an average. Lightness of straw due to excessive drought during months of May and June.

Oats.—Straw very light crop, but grain above the average, about 100 bushels; usual quantity of seed sown, 5½ bushels. Crop damaged by gales and hail in September.

Harvest was unusually early, about two weeks before usual time.

Hay.—Ryegrass and clover rather short owing to drought, but quality very good; the quantity per acre not known. *Meadow-hay.*—In wet and low-lying meadows hay was an abundant crop, but on dry land light owing to drought in early part of summer; on the whole not such a heavy crop as last year.

Potatoes.—Crop much superior to last year; disease showed itself in few places, but was not general or to any great extent; yield per acre not known. No new varieties planted.

Turnips.—Crop good and sound, and quite an average; only one sowing required; braird healthy and strong; weight per acre not tried.

No crops injured by insects. Owing to drought in early part of the season no trouble was experienced from weeds.

Live Stock.—Pastures suffered much from drought in May and June, but after rain came in July grass was plentiful. Stock throve well throughout the season, and though grass was short, seemed to be rich during first part of season. No disease known to have been among cattle or sheep in this district during past year. *Wool.*—Quality of clip very good and over the average, there not being a large percentage of broken fleeces.

SHETLAND (Lerwick District). *Wheat.*—None.

Barley.—Quantity and quality about the same as last year.

Oats.—Quality about the same as last year; straw, equal quantity; grain slightly inferior.

Harvest about a week later than usual.

Hay.—Crop not equal to last year in bulk, but quality quite as good. *Meadow-hay*—About the same as last year.

Potatoes.—The yield was below last year fully one-seventh; disease commenced about 1st August, and more or less damaged one-fifth of the crop.

Turnips.—The weight of the crop was not equal to last year, but the quality was as good; turnips brairded well, and only required one sowing.

No damage from insects. No damage from weeds.

Live Stock.—The pastures were on an average better than last year, both in growth and quality. Stock throve very fairly well. No disease. *Clip of wool*—The quality was good; weight about an average.

THE METEOROLOGY OF 1896.

The following table gives a comparison of the winds, temperature, pressure, rainfall, cloud, and sunshine of 1896 as compared with the previous forty years' averages:—

TABLE SHOWING FOR WIND DIRECTION AND FORCE, MEAN PRESSURE, TEMPERATURE, RAINFALL, CLOUD, AND SUNSHINE, THE EXCESS ABOVE, OR THE DEFECT FROM, THE AVERAGES FOR ALL SCOTLAND OF THE PREVIOUS FORTY YEARS.

	Direction of Winds—Days.									Wind Force.	Barometric Pressure.	Temperature.	Rainfall.	Cloud.	Sunshine.
	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calms.						
										lb. per sq. ft.	inches.	°	inches	p.c. of sky covered.	hours.
January .	0	-1	0	-1	-2	0	2	1	1	-0·29	0·442	2·6	-1·37	0	-12
February	-1	-1	-1	0	2	1	1	-1	0	-0·05	0·322	3·0	-1·06	7	-34
March .	-2	-2	-2	-1	2	3	3	-1	0	0·20	-0·214	1·8	1·32	-2	-12
April . .	0	-2	-4	-2	-1	1	6	2	0	0·35	0·140	2·9	-0·11	0	-24
May . .	1	0	-1	-1	-1	-3	1	3	1	-0·35	0·327	4·0	-1·30	-11	30
June . .	0	1	2	0	-1	-1	-1	0	0	0·07	-0·037	1·4	0·91	12	-74
July . .	0	1	0	0	0	-1	0	0	0	0·07	0·090	-0·4	0·72	3	-55
August .	2	0	-1	-2	-1	-2	2	3	-1	0·21	0·124	-1·6	-0·88	5	-38
Sept. . .	0	1	2	1	-1	-2	-1	0	0	0·46	-0·177	-0·4	1·33	10	-66
October .	3	2	-1	-2	-1	-2	0	1	0	0·54	-0·111	-1·2	0·57	0	-24
Nov. . .	0	0	0	-2	0	1	2	-1	0	-0·26	0·293	0·9	-1·92	2	-26
Dec . .	0	0	2	1	1	-2	-2	-1	1	0·01	-0·112	-0·1	1·64	5	-24
Year .	3	-1	-4	-9	-3	-7	13	6	2	0·08	0·091	0·8	0·15	3	-358

Hence the year 1896 was in Scotland characterised by a deficiency of N.E., E., S.E., S., and S.W. winds, amounting to 24 days in all, and an excess of W., N.W., and N. winds, amounting to 22 days, and an excess of 2 calm days. The mean barometric pressure for the year was 29·942 inches, which is the highest for any year since the Scottish Meteorological Society was established. In January pressure rose at Ochtertyre to 31·108 inches at 32° and sea-level, being absolutely the highest hitherto recorded anywhere in the British Islands since barometrical observations began to be made. The year is further remarkable for high mean temperatures of the six months from January to June, which were 2°·3 higher than the averages of these months. Temperature was also about a degree in excess in November; but in the remaining five months it was under the averages, the relatively coldest month being October, which was one of the coldest Octobers on record, the mean being 4°·2 under the average. Except in May, sunshine was under the average—in many of the months largely so—and the mean sunshine for the whole year was 358 hours under the average, or nearly an hour for each day of the year.

JANUARY.—The mean temperature of the month was 39°·7, or 2°·6 above the average, the days being 3°·1 and the nights 2°·1 in excess. Owing to the prevailing westerly winds temperature was higher at western than at eastern stations. In Orkney the excess was only a degree, and in Shetland the mean temperature was half a degree under the average. The month was remarkable for a singular absence of very low temperatures.

The mean rainfall was 2·53 inches, or 37 per cent under the average. Its distribution over the country was very unequal. In the Lewes and in the counties of Ross, Sutherland, and Caithness it was above the average, the excess in general being small; but at Scourie it rose to 69 per cent above the average. In all other parts of the country the rainfall fell short of the average, the greatest deficiency being at eastern stations situated to the south of the Moray Firth, when at many places the amount collected was less than a fourth of the average. On the other hand, at places in the west open to winds from the Atlantic the general deficiency was only from a half to a fifth of the average.

This month was remarkable, as showing a higher mean barometric pressure than any previous January; and further, at stations in the west of Perthshire, at 9 A.M. on the 9th, there occurred a higher barometric reading than had ever been recorded before in any part of the British Islands.

FEBRUARY.—The high barometer and temperature and small rainfall of the past month were continued into February.

The mean temperature was 41°·4, or 3°·0 above the average, and the excess was equally partitioned between the days and nights. This excess was pretty equally distributed over all districts of the country, with the difference that it was nearly a degree greater at western than at eastern stations; in other words, the excess was greatest where the prevailing south-westerly winds first struck the land. Again, as in January, very low temperatures were singularly absent—the lowest anywhere noted being 18°·5 at Lednathie.

The mean rainfall was 2·00 inches, or 34 per cent under the average. Except at a few isolated places in Argyle and Inverness, at which the rainfall rose slightly above the average.

it was everywhere under it. The deficiency was greatest at eastern stations from the Pentland Firth to the Tweed—the amounts over wide districts being only a fourth of the respective averages. On the other hand, over large districts in the west three-fourths of the average was collected.

MARCH.—In contradistinction to the two previous months, barometric pressure was unusually low, and as the deficiency was very much greater in the north than the south, and in the west than the east, the predominance of south-westerly winds was the most striking feature of the month, the excess above the average being, S. winds 2 days, S.W. 3 days, and W. 3 days—8 days in all.

The mean temperature was 41°·2, or 1°·8 above the average—the excess of the days being 2°·5, and of the nights 1°·0. This excess of temperature was equally distributed over all districts. The minimum temperature was 17°·8 at Kingussie, which is a remarkably high minimum for March. This is now the third month in succession characterised by a remarkable absence of very low temperatures.

The mean rainfall was 4·12 inches, or 47 per cent above the average. The distribution of the rainfall among the stations was most unequal. Thus, at eastern stations from the Moray Firth to the Tweed, on the coast and for some distance inland, the rainfall was less than the average, the greatest deficiency being from 30 to 40 per cent from Montrose to Haddington. In all other parts of the country the rainfall was above the average. At many places the excess was very large, the largest percentages above their averages being 184 at Turnberry, 173 at Fladda, 154 at Pladda, 143 at Gruinart in Islay, 123 at Airds, Holborn Head, and Inveraray. Double the average fell over wide districts which lie open to the south-westerly winds.

APRIL.—Barometric pressure was considerably above the average, the excess being larger in the north than in the south, and a little greater in the west than in the east. With this arrangement of the barometric pressure, westerly winds prevailed on 20 days, being 9 days above the average.

The mean temperature was 47°·0, or 2°·9 above the average, the excess being equally distributed between the days and the nights. This high temperature was due to the extraordinary predominance of westerly winds, and the all but complete absence of easterly winds. With these westerly winds from the Atlantic, the temperature of which at this season is only a little above the minimum for the year, the mean temperature of places near the west coast was only from 1°·5 to 2°·0 above the average; but as these winds become heated as they advance eastwards over the land, the temperature gradually increased till at many inland stations it exceeded the average by 4°·0.

The mean rainfall was 2°·3 inches, or 5 per cent less than the average. It was very unequally distributed over the different districts of the country. In the west, to the north of Girvan, it was everywhere above the average, the greatest excess being reported from Glencarron, where 8·84 inches fell, or 121 per cent above the average of this place. At a large number of western stations the rainfall of the month was a half more than the average. In other parts of the country the rainfall was under the average, and everywhere from Fraserburgh to Berwick on the coast and for some distance inland only half the average rainfall was collected. It was also less than the average in Galloway, and the counties of Lanark, Renfrew, and Dumbarton.

MAY.—The weather of this month was strongly anti-cyclonic. Barometric pressure and temperature were both unprecedentedly high—higher, indeed, than any mean pressures and temperatures in May during the last forty years. From the relatively higher pressure in the south than in the north, and in the west than in the east, resulted the greater excess of north-westerly winds.

The mean temperature was 53°·0, or 4°·0 greater than the average, the excess of the days being 6°·1, but of the night temperatures only 1°·9, thus showing in a very impressive manner that it was the strong continued sunshine which occasioned the exceptionally high temperature of the month. Owing to the greater prevalence of north-westerly winds, the least excess of temperature was in Shetland, where it was only 2°·5; and the greatest excess in inland situations south of the Grampians, where over several districts it approached 6°·0. The maximum temperature recorded in Scotland was 84°·6, which is higher than any hitherto recorded in May.

The mean rainfall was 0·80 inch, or 57 per cent below the average. It was above the average in Sutherland, Caithness, and Orkney, but the excess in all cases was small. Elsewhere it was under the average, the greatest deficiency, from 70 to 90 per cent of the averages, occurring to the south of the Grampians, or over the districts where the highest temperature occurred.

JUNE.—The lowering of the barometric pressure was greater in the south than in the north, and in the west than in the east, thus favouring the occurrence of north-easterly winds, which prevailed 3 days more than the average.

The mean temperature was 56°·2, or 1°·4 above the average, the excess of the days being 0°·9 and of the nights 1°·9, thus offering a strong contrast to the weather of the previous month. The distribution of temperature was singular. In Shetland, the extreme north of Scotland, and the north-east of Aberdeen, the mean temperature was about half a degree under the average; but above the average in all other parts of Scotland. The mean temperature steadily increased on advancing inland and to the south-east, so that the highest temperature was over all the south-western districts, where it was nearly 3°·0 above the average. It was accompanied with a much greater daily range than obtained at places in the north-east of Scotland.

The mean rainfall was 3·39 inches, or 37 per cent above the average. The distribution of the rainfall was very striking. Owing to the unusually great humidity of these north-easterly winds, they deposited inland farther to westward a very much heavier rainfall than usually accompanies easterly winds. At Glasgow, Stobo Castle, Gordon Castle, Cawdor, Inverness, and Dunrobin more than double the average rainfall of June was collected. Another peculiarity of its distribution was that it fell short in isolated patches of the counties of Dumfries, Roxburgh, Berwick, Haddington, Fife, Aberdeen, and Ross, but in all cases the deficiency was small.

JULY.—Barometric pressure was a little above the average, the excess being uniformly distributed over the country. The winds, both as respects direction and force, were the average.

The mean temperature was 56°·6, or half a degree less than the average. From North Uist to Islay, and from the Firth of Tay to the Cheviots, temperature was about half a degree above the average, but in other places it was half a degree to a degree under it, the lower temperatures being at high inland stations.

The mean rainfall was 3·89 inches, or 23 per cent above the average. It was under the average in the counties of Selkirk, Inverness, Banff, Aberdeen, the north-west of Perth and Argyle, and the west of Sutherland. The deficiency was small, the greatest being 31 per cent at Fort Augustus. In other districts the rainfall was above the average. The excess was greatest at south-western stations, the heaviest rainfalls being 7·63 inches at Cally, and 6·51 inches at Ardwell, which are respectively 111 and 109 per cent above their averages. The greater part of the rain fell from the 3d to the 9th, from the 19th to the 25th, and on the 29th. During the rest of the month passing showers characterised the weather.

AUGUST.—Barometric pressure was greatly above the average, the excess being much greater in the west than in the east, and also much greater in the south than in the north. It necessarily followed that winds from N., N.W., and W. prevailed 7 days more than the average.

The mean temperature was 55°·0, or 1°·6 under the average, the deficiency being, as in July, equally partitioned between the days and the nights. The least deficiency was over a broad belt whose central line passed through Islay, Rothesay, Dumbarton, Edinburgh, and Isle of May. The greatest deficiency was over the north-east from Nairn to Montrose.

The mean rainfall was 2·75 inches, or 25 per cent under the average. It was most unequally distributed over the country. The rainfall was above the average to the west of a line drawn from the Crinan Canal, through Fort William, Glencarron, and Lairg, to the Pentland Firth, but under the average to the south and east of it. At Scourie and Stornoway the rainfall was fully double the August average. At many places in the north-west it was a half more than the average. On the other hand, the greatest deficiency, 72 per cent, was in the south near the Cheviots; and over by far the larger proportion of Scotland the rainfall was only half the average. The weather generally showed a comparative absence of very heavy days' rains, the frequency of the falls as contrasted with the amount collected, and short-continued, very dry spells between the recurring rains.

SEPTEMBER.—Barometric pressure was much under the average, the deficiency being considerably greater in the south and east than it was in the north and west; and hence the greater prevalence of north-easterly winds, which prevailed four days more than the average. The outstanding feature of the weather of the month was the unprecedentedly small number of hours of sunshine, which only amounted to 76, the next lowest during the past forty years being 103 hours in September 1881. It is noteworthy that these 76 hours are absolutely lower than any yet recorded in March, April, May, June, July, or August.

The mean temperature was 52°·4, or 0°·4 less than the average, the depression of temperature being wholly due to the greater cold of the days, which were 1°·3 under the average, whereas the nights were 0°·4 above it, thus pointing to the deficient sunshine. At all eastern stations temperature was from half a degree to a degree under the average, but, on the other hand, at western stations temperature was from half a degree to a degree above it—a distribution of temperature due to the prevailing north-easterly winds, these acquiring at this time of the year greater warmth as they advanced westwards over the land.

The mean rainfall was 4·87 inches, or 38 per cent above the average. Owing to the north-easterly winds, the whole of the east of Scotland had a rainfall greatly in excess of the average;

and a striking peculiarity of these winds was that they carried a heavy rainfall even across the watershed of the country to western districts. The only part of Scotland that showed a rainfall short of the average was a narrow strip in the extreme west stretching in a north-westerly direction from Rothesay. In this strip the deficiency nowhere exceeded a fourth of the average. Thunder-storms were of frequent occurrence, and many of them were attended with heavy rainfalls. The heaviest rainfall occurred in the upland districts of the interior, the amounts for the month much exceeding those collected near the east coast. The weather was tolerably good from the 4th to the 8th, and for the last three days of the month. During the rest of the month the weather was characterised by constantly recurring rains, and heavy downpours, exceeding an inch a-day, were of frequent occurrence.

OCTOBER.—Barometric pressure was considerably under the average, and as the deficiency was much greater in the east than in the west, northerly winds were six days above their average frequency, and this occasioned the low temperature, low humidity, and large daily range of temperature which signalised the weather of this month.

The mean temperature was 42°·2, or 4°·2 under the average, the days being 3°·9 and the nights 4°·6 colder than the average. The depression of temperature was greater in the south than the north, being 5°·0 on the shores of the Solway, but only 3°·0 in Shetland; and greater in the east than the west, the figures being respectively 4°·5 and 3°·5. The greatest cold was experienced during the northerly winds, from the 10th to the 16th, and from the 21st to the end of the month.

The mean rainfall was 4·62 inches, or 14 per cent above the average. Its distribution over the country was exceedingly irregular. It was above the average at all places to the north of the latitude of Stornoway, and in all eastern districts with the exception of Perthshire and the upland districts of Forfarshire. In all other districts it was under the average. At most places in the west the deficiency was from a third to a half of the average fall. The amounts of the rainfall rose to double the average in the upland districts of the counties of Aberdeen, Banff, Edinburgh, Berwick, and Roxburgh; but only to about half the average over wide districts from Galloway to North Uist. Except the period from the 12th to the 17th, when little rain fell, the rains were pretty evenly distributed over the month.

NOVEMBER.—Barometric pressure was almost unprecedentedly high. The excess above the average was greater at southern than at northern stations, and a little greater at western than at eastern stations, with the result of a slight diminution of south-easterly winds and an equally slight excess of westerly winds.

The mean temperature was 41°·5, or 0°·9 above the average, the days showing an excess of 0°·6 and the nights of 1·2. The distribution of the temperature was quite peculiar, being less than the average to the south of a line drawn from Berwick to Ayr, where the deficiency varied from half a degree to nearly two degrees. In other districts temperature was above the average, the excess being greatest in the west and north, where at several places it amounted to or even exceeded 2°·0.

The mean rainfall was 1·90 inch, or 50 per cent under the average. This is the smallest rainfall of any November during the past forty years, except 1867, when the mean amount was only 1·25 inch. At many places only a fourth of the average fell; but in north-western and northern districts the deficiency was much less, becoming less and less on proceeding to the north-west, till at Stornoway, the Butt of Lewis, and Cape Wrath it rose slightly above the average.

December.—Barometric pressure was unusually low, the depression being very great in the south, but near the normal at northern stations; and a little greater in the west than in the east. From this distribution of the pressure resulted the four days' excess of south-easterly winds, with the remarkable distributions of temperature and rainfall which accompanied them.

The mean temperature was 37°·6, or 0°·2 less than the average, the days and nights being respectively near their averages. Owing to the higher temperature of the North Sea at this season, and the south-easterly winds, all eastern districts from Fraserburgh to the Tweed had a mean temperature from half a degree to a degree above the average. In other parts of Scotland temperature was under the average, the lowering being a degree over wide districts; and in Galloway, which is most sheltered from these winds, it was 2°·0 under the average.

The mean rainfall was 5·61 inches, or 42 per cent above the average. It was very large from Tarbetness to the Tweed, being at many places considerably more than double the December averages. As the heavier rains fell with the south-easterly winds, the rainfall at Duns Castle was 164 per cent above the average, but in Mid-Lothian, on the other side of the Lammermoors, the excess was only 50 per cent. Again, at Lednathie, on the southern slopes of the Grampians, it was 158 per cent above the average; but on the other side of this range of mountains, from Speyside to Cromarty, it was only 20 per cent in excess. On the other hand, the rainfall was less than the average to the west of a line drawn from Oban to Lairg and thence to Cape Wrath, the greatest deficiency, about half the average, being in Skye and the Outer Hebrides.

The harvest of 1896 was from two to three weeks earlier than usual in eastern districts south of the Grampians; between the Grampians and the Moray Firth a week earlier; in western districts, from the Dornoch Firth to Kintyre, cutting began at the usual time; but in Sutherland, Caithness, Orkney, and Shetland it was from a week to a fortnight later than usual.

The crops of *wheat*, *barley*, and *oats* were almost everywhere fine large crops, and bulked and threshed out well where they were secured before the rains set in, which proved so disastrous to the harvest of 1896. These rains were very heavy during the last week of August, particularly in districts in the west. From this time to September 13th good harvest weather on the whole prevailed to the north of the Grampians, after which heavy and persistent rains ruled till October 10th. South of the Grampians these disastrous rains began earlier—viz., on September 9th.

Potatoes were rather under the average at strictly western districts, from the Solway to Wester Ross; but in nearly every other part of the country the crop was considerably above the average. Disease appeared in a few places, but it appears to have been restricted to particular varieties of the crop.

Turnips were under an average crop from Sutherland to Shetland, but elsewhere above it, the crop in several localities being a singularly heavy one.

AGRICULTURAL STATISTICS.—Returned upon 4th June 1896.—(*Compiled from the Government Returns.*)

Table No. 1.—Acreage under each kind of Crop, Bare Fallow, and Grass, in each County of Scotland.

Counties.	Total Acreage under Crops, Bare Fallow, and Grass.	Corn Crops.							Green Crops.							Clover, Sainfoin, and Grasses under Rotation.	Permanent Pasture (exclusive of Mountain Land).	Flax.	Small Fruit.	Bare Fallow or Uncropped Arable Land.
		Wheat.	Barley or Bere.	Oats.	Rye.	Beans.	Peas.	Total.	Potatoes.	Turnips.	Mangels.	Cabbage, Kohl-rabi, and Rape.	Vetches or Tares.	Other Green Crops.	Total.					
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1. Aberdeen . .	630,043	22	23,528	191,898	161	483	427	216,519	7,365	91,106	6	73	2,387	200	101,137	276,709	35,192	2	341	143
2. Argyll . .	132,890	..	1,768	18,203	547	49	2	20,569	4,804	5,585	34	164	26	42	10,655	26,233	74,900	..	36	497
3. Ayr . . .	321,656	1194	1,289	47,175	209	521	4	50,392	8,498	7,368	487	860	30	277	17,520	97,305	156,088	..	148	203
4. Banff . . .	160,000	1	9,096	48,379	122	99	63	57,760	1,984	22,368	5	4	1,004	15	25,380	63,206	13,533	8	21	92
5. Berwick . .	191,343	1451	19,562	35,156	38	937	101	57,245	2,462	27,690	119	535	867	5	31,678	59,073	43,268	..	22	57
6. Bute . . .	25,675	1	114	5,140	97	39	8	5,399	1,043	1,442	16	53	9	15	2,578	8,160	9,401	..	72	65
7. Caithness . .	110,137	8	813	34,113	9	1	19	34,963	1,652	13,667	4	43	420	3	15,789	29,866	29,399	..	8	112
8. Clackmannan .	15,652	224	394	3,360	48	486	..	4,512	334	887	1	81	21	2	1,326	3,558	6,005	..	11	240
9. Dumbarton .	51,272	784	201	7,329	14	146	19	8,493	2,214	1,429	31	233	63	12	3,982	15,018	23,610	..	79	90
10. Dumfries . .	259,252	44	452	46,283	71	28	1	46,879	3,717	19,330	76	705	59	78	24,055	83,648	104,445	..	75	150
11. Edinburgh . .	137,711	3,237	5,002	24,820	7	144	102	33,312	4,984	12,255	35	832	364	379	18,849	34,934	50,271	11	256	78
12. Elgin . . .	101,657	560	14,239	21,546	738	91	22	37,196	1,648	15,548	26	48	417	12	17,699	35,950	10,726	2	27	57
13. Fife . . .	255,747	7,873	22,513	41,500	1,646	1,096	23	74,651	14,855	25,371	34	257	769	65	41,351	65,833	72,945	1	187	779
14. Forfar . .	252,638	7,024	27,620	51,564	1,458	624	69	88,359	12,341	34,294	22	177	597	110	47,541	86,109	30,361	1	193	74
15. Haddington .	112,062	4,351	15,531	18,435	46	494	63	38,920	7,952	16,384	90	379	235	240	25,280	27,480	19,938	6	368	70
16. Inverness . .	150,510	8	7,049	30,814	752	4	38	38,665	5,903	10,778	9	32	112	10	16,844	30,277	64,383	..	37	304
17. Kincardine .	120,927	381	11,299	30,295	55	583	38	42,651	2,590	18,035	1	11	453	32	21,122	48,336	8,738	..	79	1
18. Kinross . .	35,661	..	392	6,649	73	33	..	7,147	573	2,792	..	86	56	2	3,509	12,536	12,435	..	19	15
19. Kirkcudbright .	191,214	38	13	29,147	37	51	1	29,287	1,478	12,951	54	1,301	46	63	15,893	62,109	83,831	..	30	64
20. Lanark . .	256,645	1,559	259	39,994	50	758	37	42,657	4,075	9,571	28	1,866	362	205	16,107	105,307	90,128	..	2,107	339
21. Linlithgow .	59,158	793	3,193	10,542	9	397	10	14,944	1,641	4,147	7	144	238	12	6,189	14,907	22,891	..	27	200
22. Nairn . . .	25,692	14	3,257	5,681	133	..	17	9,102	316	4,298	9	..	31	3	4,657	8,768	2,976	..	3	186
23. Orkney . .	105,990	..	4,539	33,899	5	3	33	38,479	2,845	14,501	..	33	286	..	17,665	32,601	17,002	..	..	243
24. Shetland . .	59,930	..	2,029	7,326	3	..	..	9,358	3,158	1,314	2	476	3	..	4,953	1,052	44,090	..	..	477
25. Peebles . .	47,553	10	322	8,611	..	..	43	8,986	368	4,233	..	385	64	..	5,050	18,544	14,952	..	6	15
26. Perth . . .	337,338	4,222	13,251	68,991	925	2,236	51	89,676	12,560	29,614	18	223	434	46	42,895	97,626	104,806	..	853	1,482
27. Renfrew . .	92,217	1,320	167	12,259	73	279	5	14,103	3,107	2,328	29	383	39	55	5,941	21,626	50,298	..	82	167
28. Ross & Cromarty	141,403	518	12,047	31,468	852	12	39	44,936	7,572	16,505	10	6	494	3	24,590	39,990	31,683	..	28	176
29. Roxburgh . .	179,984	325	12,383	30,373	80	168	22	43,351	1,373	22,270	47	692	357	18	24,757	54,361	57,449	..	65	1
30. Selkirk . .	30,165	..	309	5,227	1	3	8	5,548	229	2,949	..	94	52	2	3,326	8,538	12,684	..	68	1
31. Stirling . .	119,478	1,355	3,316	19,178	48	3,004	28	26,929	3,004	4,653	11	259	327	23	8,277	31,747	51,227	..	98	1,200
32. Sutherland .	31,984	..	1,489	8,137	99	3	11	9,739	1,639	3,097	..	24	22	3	4,785	8,136	9,239	..	5	80
33. Wigtown . .	153,150	412	847	34,624	51	189	6	36,129	1,505	16,140	113	312	88	82	18,240	61,929	36,631	..	9	212
Total . .	4,896,734	37,729	218,283	1,008,116	8,457	12,961	1,310	1,286,856	129,789	474,900	1,324	10,861	10,732	2,014	629,620	1,571,472	1,395,525	31	5,360	7,870

TABLE NO. 2.—ESTIMATED TOTAL PRODUCE OF WHEAT, BARLEY, AND OATS, ACREAGE and Estimated AVERAGE YIELD per Acre in the Year 1895, compared with the Estimated YIELD for the Years 1894 and 1893, and the AVERAGE of the Ten Years, 1885-94, in each COUNTY of SCOTLAND.

COUNTIES.	WHEAT.						BARLEY, INCLUDING BERE.						OATS.					
	Total Produce in 1895.	Acreage in 1895.	Average Yield per Acre.			Average of the Ten Years, 1885-94.	Total Produce in 1895.	Acreage in 1895.	Average Yield per Acre.			Average of the Ten Years, 1885-94.	Total Produce in 1895.	Acreage in 1895.	Average Yield per Acre.			Average of the Ten Years, 1885-94.
			1895.	1894.	1893.				1895.	1894.	1893.				1895.	1894.	1893.	
	Bush.	Acres.	Bush.	Bush.	Bush.	Bush.	Bush.	Acres.	Bush.	Bush.	Bush.	Bush.	Bush.	Acres.	Bush.	Bush.	Bush.	Bush.
Aberdeen	26	1	26.00	27.00	22.60	30.18	612,620	17,947	34.13	34.66	34.94	33.09	7,090,958	196,755	36.04	36.54	35.51	33.99
Argyle	..	..	..	..	28.00	31.25	62,925	1,830	34.39	34.93	33.64	31.13	545,419	18,052	30.21	30.78	31.83	31.12
Ayr	32,215	980	32.87	38.01	40.31	37.81	51,506	1,462	35.23	39.75	42.07	38.96	1,912,846	46,347	41.27	45.56	48.66	46.03
Banff	96	3	32.00	28.33	31.78	30.93	272,636	7,517	36.27	34.06	38.48	34.44	1,834,629	50,018	36.68	35.30	38.46	33.33
Berwick	28,879	975	29.62	33.00	32.68	32.67	698,503	20,655	33.82	35.42	34.97	35.65	1,224,786	34,362	35.64	38.16	37.58	37.44
Bute	..	..	..	..	..	29.00	5,048	131	38.53	39.56	38.48	37.49	163,841	5,090	32.19	34.05	34.84	35.70
Caithness	219	15	14.60	17.00	..	18.75	29,529	886	33.33	40.35	36.63	32.68	1,257,453	34,472	36.48	38.31	35.09	32.19
Clackmannan	6,810	215	31.67	36.61	34.96	33.97	14,105	428	32.96	32.81	35.24	33.94	139,443	3,582	39.48	41.45	44.58	40.13
Dumbarton	25,531	678	37.66	37.79	40.52	37.94	12,125	288	42.10	45.08	44.32	38.45	315,215	7,110	44.33	44.28	46.32	38.83
Dumfries	2,017	66	30.56	34.45	36.58	34.02	14,232	510	27.91	32.16	32.35	33.57	1,321,465	45,742	28.89	32.40	32.51	33.54
Edinburgh	120,822	2,997	40.31	44.77	46.09	41.22	244,450	5,709	42.82	45.03	46.32	42.16	1,051,841	24,649	42.67	43.26	46.15	40.97
Elgin or Moray	20,317	583	34.85	34.14	34.38	32.93	502,320	13,658	36.78	32.94	33.67	32.99	861,234	21,758	39.58	36.23	35.28	33.32
Fife	214,446	7,075	30.31	35.54	33.99	33.61	748,046	23,282	32.13	34.92	33.20	34.49	1,334,545	41,344	32.28	36.84	37.33	36.13
Forfar	207,657	6,578	31.57	35.59	32.71	33.63	945,160	28,131	33.60	33.88	38.07	37.01	2,170,901	51,652	42.03	45.51	47.04	43.05
Haddington	123,141	3,519	34.99	39.60	37.84	37.40	625,767	16,231	38.55	41.96	43.22	41.44	785,536	18,704	42.00	47.99	48.18	44.55
Inverness	67	2	33.50	31.12	39.72	33.33	247,954	6,801	36.46	35.47	35.19	33.54	1,000,846	30,364	32.96	30.38	29.09	29.48
Kincardine	7,455	228	32.70	34.97	35.46	34.49	383,972	10,868	35.33	34.16	35.31	34.28	1,227,310	30,927	39.68	40.11	40.18	37.47
Kinross	..	..	..	32.18	30.00	29.48	7,184	247	29.09	33.10	35.21	35.81	173,002	6,588	26.26	32.43	34.45	34.54
Kirkcudbright	1,530	50	30.60	31.02	33.78	30.50	3,161	104	30.39	30.41	32.22	31.24	807,684	27,601	29.26	33.13	33.49	33.74
Lanark	46,624	1,450	32.15	36.57	40.55	36.87	9,065	293	30.94	34.68	40.87	36.63	1,262,969	39,084	32.31	36.24	40.11	35.49
Linlithgow	29,780	844	35.28	38.42	38.56	36.91	142,527	3,368	42.32	44.22	44.29	42.61	455,476	10,461	43.54	42.34	43.61	40.90
Nairn	396	16	24.75	32.00	38.00	29.92	109,340	3,057	35.77	34.49	36.05	33.49	180,997	5,787	31.28	37.64	37.36	34.39
Orkney	..	..	..	..	..	30.00	156,421	4,641	33.70	33.05	32.06	32.37	1,002,025	33,837	29.61	29.17	28.20	29.09
Peebles	280	10	28.00	30.00	34.00	30.65	14,147	452	31.30	33.57	35.77	33.40	259,761	8,291	31.33	33.44	36.93	33.76
Perth	113,230	3,708	30.54	35.53	36.47	35.07	464,063	15,179	30.57	32.94	34.16	33.74	2,160,886	67,752	31.89	34.84	33.40	34.26
Renfrew	52,556	1,335	39.37	41.34	42.75	40.29	6,205	164	37.84	43.72	46.42	43.18	510,895	12,241	41.74	44.13	47.63	43.76
Ross and Cromarty	19,929	444	44.89	43.88	44.18	36.41	477,918	11,398	41.93	40.72	40.87	35.42	1,390,868	32,133	43.28	41.87	40.20	35.53
Roxburgh	3,635	131	27.75	30.04	29.13	33.54	427,971	12,786	33.47	34.24	36.83	35.48	984,202	30,350	32.43	34.52	36.56	34.75
Selkirk	24	1	24.00	..	30.00	26.80	9,138	334	27.36	31.19	32.71	31.36	157,600	4,932	31.95	29.37	34.38	30.69
Shetland	..	..	..	..	..	..	54,631	2,035	26.84	31.87	24.18	21.41	216,671	7,305	29.66	33.20	25.66	17.65
Stirling	40,207	1,480	27.17	37.47	35.28	33.06	132,331	3,737	35.41	34.60	35.84	33.91	705,646	18,446	38.25	40.22	41.50	36.21
Sutherland	25	1	25.00	30.00	25.00	23.82	51,174	1,498	34.16	33.46	33.06	31.23	265,100	8,004	33.12	31.83	29.97	33.29
Wigtown	6,379	256	24.92	26.75	26.71	28.71	25,838	916	28.20	31.10	29.27	31.08	1,077,502	34,698	31.05	36.29	38.51	37.14
Total	1,104,293	33,641	32.83	37.11	36.58	..	7,562,072	216,543	34.92	35.55	36.38	..	35,849,552	1,008,388	35.55	37.26	37.65	..

TABLE No. 3.—ESTIMATED TOTAL PRODUCE OF BEANS, PEAS, AND POTATOES, ACREAGE and Estimated AVERAGE YIELD per Acre in the Year 1895, compared with the Estimated YIELD for the Years 1894 and 1893, and the AVERAGE of the Ten Years, 1885-94, in each COUNTY of SCOTLAND.

COUNTIES.	BEANS.						PEAS.						POTATOES.					
	Total Produce in 1895.	Acreage in 1895.	Average Yield per Acre. 1895.	Average Yield per Acre. 1894.	Average Yield per Acre. 1893.	Average of the Ten Years, 1885-94.	Total Produce in 1895.	Acreage in 1895.	Average Yield per Acre. 1895.	Average Yield per Acre. 1894.	Average Yield per Acre. 1893.	Average of the Ten Years, 1885-94.	Total Produce in 1895.	Acreage in 1895.	Average Yield per Acre. 1895.	Average Yield per Acre. 1894.	Average Yield per Acre. 1893.	Average of the Ten Years, 1885-94.
	Bush.	Acres.	Bush.	Bush.	Bush.	Bush.	Bush.	Acres.	Bush.	Bush.	Bush.	Bush.	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.
Aberdeen	11,078	445	24.89	25.61	24.80	24.57	8,227	343	23.99	24.07	23.65	21.25	41,424	7,245	5.72	4.02	6.54	4.95
Argyle	1,381	74	18.66	20.08	20.56	22.76	41	2	20.50	21.00	18.00	24.80	4,253	658	6.46	5.54	6.54	5.32
Ayr	11,697	369	31.70	34.52	35.17	32.92	251	8	31.37	30.50	37.60	34.52	8,830	1,542	5.73	4.98	6.15	5.98
Banff	2,395	100	23.95	22.83	21.38	25.78	1,038	45	23.07	23.36	22.37	21.48	27,925	4,901	5.70	4.37	5.52	5.30
Berwick	24,116	851	28.34	35.07	31.32	30.44	1,801	73	24.67	23.66	26.25	23.56	66,192	8,607	7.69	5.75	7.31	6.33
Bute	861	47	18.23	19.09	20.25	25.43	70	5	14.00	15.38	18.00	21.55	34,928	4,464	7.82	6.63	7.89	6.59
Caithness	9	1	9.00	11.12	8.00	14.90	112	12	9.33	16.94	14.00	16.27	12,983	1,704	7.62	6.22	7.25	5.75
Clackmannan	15,591	509	30.63	26.95	28.41	29.07	..	..	..	..	..	26.44	13,853	1,963	7.06	4.17	6.26	4.64
Dumbarton	2,754	118	23.34	30.29	32.12	28.42	49	3	16.33	19.60	18.60	21.99	1,421	325	4.37	2.86	4.67	4.43
Dumfries	567	25	22.68	24.78	21.68	27.55	21	1	21.00	20.50	21.00	25.03	24,173	2,890	8.36	5.37	8.75	6.66
Edinburgh	5,387	156	34.53	36.49	34.26	31.74	2,112	84	25.14	26.33	24.63	23.81	16,139	2,390	6.75	5.69	5.95	5.90
Elgin or Moray	1,289	48	26.85	30.11	24.97	28.97	474	20	23.70	24.00	22.64	21.94	6,146	1,036	5.93	5.44	6.97	6.79
Fife	24,753	1,019	24.29	32.81	35.64	33.12	364	18	20.22	32.80	29.90	28.97	10,769	1,653	6.51	2.67	7.04	4.67
Forfar	17,973	609	29.51	33.35	31.65	32.48	1,082	37	29.24	28.37	27.87	26.61	4,351	373	11.66	7.71	9.37	6.79
Haddington	14,819	416	35.62	36.95	33.08	32.09	1,146	43	26.65	26.73	25.00	23.88	21,211	2,337	9.08	7.73	8.90	7.50
Inverness	..	..	..	17.00	17.20	23.07	359	14	25.64	27.77	24.27	26.80	2,922	438	6.67	6.82	8.03	6.02
Kincardine	17,852	517	34.53	32.18	32.88	32.06	1,127	44	25.61	27.87	23.56	24.92	28,629	4,061	7.05	6.12	7.08	6.23
Kinross	780	26	30.00	32.11	34.57	28.94	96	4	24.00	30.00	30.00	30.00	32,999	4,841	6.82	6.48	7.76	6.32
Kirkcudbright	789	27	29.22	33.81	35.15	32.98	28	1	28.00	29.00	26.00	25.58	93,607	13,717	6.82	4.95	7.04	5.88
Lanark	19,802	619	31.99	31.85	35.17	32.35	699	22	31.77	28.96	28.44	26.42	25,390	3,220	7.89	6.45	7.85	7.00
Linlithgow	8,621	302	28.55	36.00	32.40	31.47	149	6	24.83	30.00	25.84	24.79	11,229	1,679	6.69	3.67	5.14	4.31
Nairn	..	..	..	..	..	24.67	616	25	24.64	24.43	23.67	18.90	86,021	15,390	5.59	4.42	5.15	4.86
Orkney	—	—*	—	—	—	14.66	—	—†	—	—	—	12.95	26,615	7,966	3.34	2.89	5.80	5.55
Peebles	..	..	..	28.00	..	26.61	600	24	25.00	24.46	28.60	22.72	76,741	12,580	6.10	4.14	5.35	5.39
Perth	68,118	2,261	30.13	27.07	33.13	29.67	426	17	25.06	25.63	24.84	25.26	56,087	7,809	7.18	6.55	7.01	6.30
Renfrew	10,808	268	40.33	40.29	41.67	40.48	107	3	35.67	36.50	37.00	37.00	8,885	1,442	6.16	5.16	6.32	5.37
Ross and Cromarty	189	8	23.62	23.00	23.00	25.41	606	23	26.35	25.52	25.86	24.90	892	205	4.35	3.52	4.90	4.54
Roxburgh	2,674	88	30.39	32.89	31.04	30.24	556	21	26.48	26.96	31.49	26.17	24,050	6,297	3.82	2.99	5.65	4.53
Selkirk	..	..	..	..	..	..	198	8	24.75	22.00	32.00	23.08	19,506	2,661	7.33	4.31	6.93	5.89
Shetland	—	—*	—	..	..	..	..	..	..	..	..	..	13,601	3,179	4.28	4.32	3.89	4.25
Stirling	81,016	2,932	27.63	27.34	31.64	27.54	920	34	27.06	24.25	27.00	23.00	31,617	3,602	8.78	6.55	8.24	6.37
Sutherland	..	..	..	21.00	20.00	21.17	264	12	22.00	23.25	22.89	17.60	5,786	1,673	3.46	2.28	5.51	4.54
Wigtown	4,850	163	29.75	30.08	29.53	28.71	167	6	27.83	28.67	35.00	29.78	7,543	1,484	5.08	3.80	5.06	5.26
Total	350,169	11,998	29.19	30.54	32.48	..	23,706	958	24.74	25.13	24.79	..	846,718	134,332	6.30	4.84	6.42	..

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* Exclusive of 10 acres in Orkney and 1 acre in Shetland, the produce of which was picked green.

† Exclusive of 37 acres in Orkney, the produce of which was picked green.

TABLE No. 4.—ESTIMATED TOTAL PRODUCE of TURNIPS and MANGELS, ACREAGE, and Estimated AVERAGE YIELD per Acre in the Year 1895, compared with the Estimated YIELD for the Years 1894 and 1893, and the AVERAGE of the Ten Years, 1885-94, in each COUNTY of SCOTLAND.

COUNTIES.	TURNIPS.						MANGELS.					
	Total Produce in 1895.	Acreage in 1895.	Average Yield per Acre.			Average of the Ten Years, 1885-94.	Total Produce in 1895	Acreage in 1895.	Average Yield per Acre.			Average of the Ten Years, 1885-94.
			1895.	1894.	1893.				1895.	1894.	1893.	
	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.
Aberdeen	1,372,536	91,647	14.98	12.65	16.40	14.54	86	9	9.56	11.80	13.00	10.81
Argyle	76,557	5,506	13.90	11.84	15.25	13.92	455	43	10.58	11.65	13.00	12.71
Ayr	124,622	7,585	16.43	14.92	23.18	17.36	9,131	454	20.11	15.43	24.33	16.88
Banff	371,460	22,443	16.55	10.54	16.75	14.32	12	1	12.00	..	15.00	15.84
Berwick	403,011	28,334	14.22	15.47	15.76	15.69	1,499	83	18.06	16.68	20.87	17.08
Bute	24,860	1,473	16.88	14.45	19.27	15.53	129	10	12.90	11.67	15.40	12.92
Caithness	223,359	13,978	15.98	10.50	20.16	15.63	90	9	10.00	..	10.67	10.67
Clackmannan	8,473	833	10.17	11.45	13.97	12.27	9	1	9.00	10.00	13.00	11.96
Dumbarton	26,098	1,447	18.04	16.29	21.51	15.36	493	29	17.00	13.85	19.27	13.92
Dumfries	252,064	20,154	12.51	12.37	18.20	15.28	1,323	74	17.88	18.88	23.57	21.28
Edinburgh	245,377	12,627	19.43	17.46	21.11	17.10	517	31	16.68	18.10	18.40	13.70
Elgin or Moray	301,582	15,824	19.06	12.71	18.96	15.85	135	9	15.00	12.77	18.33	16.75
Fife	245,971	26,036	9.45	9.51	12.95	11.70	178	27	6.60	5.91	8.50	9.62
Forfar	601,564	35,067	17.15	14.51	17.18	16.16	274	12	22.83	21.33	20.73	18.45
Haddington	317,185	16,514	19.21	18.88	19.64	18.11	2,382	136	17.51	17.21	15.16	13.40
Inverness	123,637	10,858	11.39	10.19	12.66	12.84	148	11	13.45	12.22	17.00	20.24
Kincardine	290,469	17,934	16.20	12.72	15.97	13.93	..	..	..	..	..	16.32
Kinross	34,753	2,752	12.63	12.70	15.11	12.32	..	..	..	..	...	..
Kirkcudbright	207,935	13,818	15.05	14.41	17.16	16.62	545	41	13.29	13.82	17.17	15.24
Lanark	201,421	9,713	20.74	16.55	21.63	18.25	256	20	12.80	10.56	17.59	13.08
Linlithgow	74,274	4,179	17.77	17.81	20.83	16.05	24	2	12.00	12.00	13.60	10.92
Nairn	65,280	4,255	15.34	12.54	14.83	14.08	24	2	12.00	..	..	13.33
Orkney	122,445	14,377	8.51	8.01	11.45	12.35	..	..	..	2.00	..	4.08
Peebles	75,470	4,329	17.43	17.02	19.98	16.02	..	..	..	..	14.00	14.00
Perth	454,556	29,912	15.20	13.61	16.16	14.14	62	6	10.33	10.20	11.85	11.89
Renfrew	39,647	2,343	16.92	16.55	21.38	16.75	407	25	16.28	15.63	15.12	15.11
Ross and Cromarty	189,248	16,720	10.78	10.06	12.17	12.71	69	5	13.80	12.42	18.29	22.06
Roxburgh	311,516	23,057	13.51	14.42	17.14	16.00	37	2	18.50	18.14	25.91	20.17
Selkirk	34,318	2,994	11.46	10.36	14.85	14.46	..	..	..	18.00	..	21.67
Shetland	19,400	1,331	14.58	16.95	14.20	13.56	8	3	2.67	..	..	..
Stirling	62,733	4,529	13.85	14.53	19.46	15.10	113	9	12.56	12.80	16.50	12.22
Sutherland	30,767	3,147	9.78	8.06	11.47	13.35	..	..	..	..	..	21.33
Wigtown	209,999	16,335	12.86	12.65	15.46	14.73	1,372	90	15.24	13.23	15.48	16.16
Total	7,133,590	482,051	14.80	13.07	16.64	..	19,778	1,144	17.29	15.08	20.95	..

TABLE No. 5.—ESTIMATED TOTAL PRODUCE OF HAY from Clover, Sainfoin, and Grasses under Rotation, also Total from Permanent Pasture, ACREAGE, and Estimated AVERAGE YIELD per Acre in the Year 1895, compared with the Estimated YIELD for the Years 1894 and 1893, and the AVERAGE of the Nine Years, 1886-94, in each COUNTY of SCOTLAND.

COUNTIES.	FROM CLOVER, SAINFOIN, AND GRASSES.						FROM PERMANENT PASTURE.					
	Total Produce in 1895.	Acreage in 1895.	Average Yield per Acre.			Average of the Nine Years, 1886-94.	Total Produce in 1895.	Acreage in 1895.*	Average Yield per Acre.			Average of the Nine Years, 1886-94.
			1895.	1894.	1893.				1895.	1894.	1893.	
	Cwt.	Acres.	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Acres.	Cwt.	Cwt.	Cwt.	Cwt.
Aberdeen	980,130	47,765	20.52	35.20	23.48	27.01	51,230	2,624	19.52	27.70	21.55	21.18
Argyle	261,667	10,653	24.56	30.36	29.01	29.69	395,463	14,587	27.11	30.14	28.34	28.61
Ayr	587,784	27,487	21.38	33.58	34.97	34.13	522,854	21,689	24.11	38.80	37.49	37.26
Banff	196,754	9,947	19.78	42.48	24.72	27.79	33,827	1,913	17.68	31.81	19.69	21.34
Berwick	227,608	8,883	25.62	35.07	27.58	35.18	90,467	4,117	21.97	30.36	24.28	29.86
Bute	46,722	2,192	21.31	32.26	33.00	35.30	16,424	761	21.58	28.69	28.79	30.44
Caithness	206,865	9,585	21.58	47.01	17.68	27.76	48,427	3,251	14.90	21.61	13.29	19.12
Clackmannan	29,228	1,210	24.16	32.82	32.54	34.81	20,492	932	21.99	30.81	25.00	29.66
Dumbarton	212,254	6,418	33.07	44.31	37.94	34.12	110,888	2,854	38.85	43.95	39.07	32.61
Dumfries	313,652	17,966	17.46	27.44	22.67	25.41	272,182	18,513	14.70	30.75	21.90	28.03
Edinburgh	608,062	11,552	52.64	46.56	41.75	42.22	112,435	3,271	34.37	34.70	33.42	33.09
Elgin or Moray	174,732	7,426	23.53	34.54	21.66	24.51	25,151	1,220	20.62	29.29	16.69	19.79
Fife	553,020	24,616	22.47	36.61	23.80	30.82	176,083	8,231	21.39	29.27	22.42	27.15
Forfar	739,019	18,968	38.96	36.38	29.84	30.80	59,235	2,353	25.17	25.00	22.33	26.36
Haddington	488,624	9,462	51.64	45.59	36.29	41.08	73,070	2,337	31.27	32.06	29.04	32.31
Inverness	239,997	11,599	20.69	19.48	16.41	18.41	80,662	5,836	13.82	13.05	10.57	12.14
Kincardine	260,414	11,810	22.81	33.12	22.88	27.86	5,707	372	15.34	20.32	15.13	18.94
Kinross	52,045	2,424	21.47	29.72	24.22	28.50	34,741	1,390	24.99	28.37	24.14	31.76
Kirkcudbright	171,539	8,705	19.71	30.06	25.32	26.49	268,899	13,099	20.53	29.08	23.79	25.75
Lanark	832,383	31,813	26.16	39.85	39.13	36.23	333,810	13,029	25.62	39.44	39.34	39.26
Linlithgow	272,495	6,130	44.45	43.52	35.97	37.12	69,649	2,270	30.68	29.99	29.45	31.46
Nairn	35,534	2,011	17.67	26.72	18.94	20.26	11,697	717	16.31	22.72	16.92	16.69
Orkney	246,183	10,188	24.16	28.06	17.80	22.82	13,006	1,155	11.26	10.62	4.32	12.62
Peebles	42,993	2,035	21.13	32.36	28.23	29.44	44,399	1,957	22.69	30.71	29.03	28.77
Perth	831,895	28,093	29.61	32.99	30.35	32.06	347,690	14,863	23.39	27.10	23.71	24.38
Renfrew	354,948	12,204	29.08	39.48	43.28	37.84	304,883	7,986	38.18	43.01	49.78	44.26
Ross and Cromarty	292,895	13,502	21.69	20.78	19.69	21.78	35,066	3,574	9.81	9.87	9.61	11.50
Roxburgh	208,786	8,497	24.57	36.64	26.64	34.52	120,703	5,925	20.37	31.07	25.20	31.02
Selkirk	22,439	1,096	20.47	31.34	25.07	31.88	22,312	1,465	15.23	22.78	19.80	27.40
Shetland	15,894	691	23.00	28.08	22.95	28.20	27,112	1,586	17.09	21.79	10.62	14.96
Stirling	299,240	12,320	24.29	33.70	32.97	31.04	125,521	4,616	27.19	33.92	28.48	26.32
Sutherland	84,327	4,089	20.62	20.89	17.03	19.29	19,732	1,783	11.07	12.59	9.98	12.12
Wigtown	136,799	4,640	29.48	42.64	37.01	39.55	71,258	4,177	17.06	31.29	24.39	30.42
Total	10,035,927	385,977	26.00	35.14	28.49	..	3,945,075	174,453	19.16	28.62	12.56	..

* Exclusive of mountain and heath land.

TABLE NO. 6.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN EACH COUNTY OF SCOTLAND AS RETURNED ON JUNE 4, 1896.

COUNTIES.	HORSES (including Ponies).				CATTLE.				SHEEP.			PIGS.
	Used solely for Agriculture, &c.	Unbroken Horses.	Mares kept solely for breeding.	Total.	Cows and Heifers in Milk or in Calf.	Other Cattle.		Total.	1 Year Old and above.	Under 1 Year.	Total.	
						2 Years and above.	Under 2 Years.					
1. Aberdeen	22,942	7,776	354	31,072	45,091	45,515	88,185	178,791	123,250	67,181	190,431	11,461
2. Argyll	4,321	2,196	345	6,862	22,637	12,602	25,908	61,147	715,524	335,445	1,050,969	4,380
3. Ayr	6,947	2,510	493	9,950	50,670	14,051	35,565	100,286	223,646	149,628	373,274	14,776
4. Banff	6,544	2,350	89	8,983	12,890	7,034	23,866	43,790	38,205	25,604	63,809	2,986
5. Berwick	4,255	1,283	219	5,757	3,124	4,724	8,170	16,018	164,168	148,695	312,863	4,318
6. Bute	1,029	306	37	1,372	3,887	1,517	4,371	9,775	32,633	17,010	49,643	935
7. Caithness	4,336	1,275	70	5,681	7,656	3,323	11,509	22,488	73,807	42,941	116,748	1,790
8. Clackmannan	493	209	9	711	1,562	1,018	1,476	4,056	9,180	5,707	14,887	2,744
9. Dumbarton	1,451	482	69	2,002	8,447	2,513	4,291	15,251	51,131	27,513	78,644	1,605
10. Dumfries	5,581	2,000	265	7,846	19,602	11,459	27,296	58,357	327,800	216,453	544,253	10,636
11. Edinburgh	3,676	782	80	4,538	11,667	4,224	4,891	20,782	110,845	78,416	189,261	7,291
12. Elgin	3,825	1,267	47	5,139	6,353	4,589	11,855	22,797	39,542	25,072	64,614	2,921
13. Fife	7,675	2,462	153	10,290	11,805	16,751	21,076	49,632	63,315	42,603	105,918	5,955
14. Forfar	8,432	1,978	120	10,530	12,047	19,875	21,323	53,245	95,864	61,146	157,010	7,272
15. Haddington	3,188	433	54	3,675	1,809	4,437	2,944	9,190	73,469	50,900	124,369	2,068
16. Inverness	6,859	2,051	187	9,097	21,795	7,468	23,551	52,814	451,788	209,311	661,099	2,763
17. Kincardine	4,188	1,161	35	5,334	7,083	6,994	12,975	27,052	24,003	15,949	39,952	2,624
18. Kinross	783	369	27	1,179	1,201	1,249	4,111	6,561	22,056	16,594	38,650	499
19. Kirkcudbright	3,964	1,779	233	5,976	15,305	11,507	19,660	46,472	249,527	144,895	394,422	7,284
20. Lanark	6,220	2,131	253	8,604	37,947	11,454	22,302	71,703	148,302	92,469	240,771	7,540
21. Linlithgow	1,544	620	71	2,235	4,647	2,907	4,428	11,982	19,177	8,558	27,735	1,767
22. Nairn	1,047	398	13	1,458	1,826	829	3,642	6,297	13,572	6,094	19,666	683
23. Orkney	5,016	1,508	90	6,614	9,884	4,034	14,479	28,397	17,615	17,613	35,228	3,845
24. Shetland	777	2,560	2,227	5,564	7,806	4,781	6,482	19,069	63,827	41,500	105,327	2,918
25. Peebles	898	240	24	1,162	2,136	1,234	3,653	7,023	109,601	81,260	190,861	705
26. Perth	10,162	3,260	255	13,677	18,276	20,991	38,736	78,003	485,695	245,255	730,950	8,228
27. Renfrew	2,575	786	162	3,523	16,708	3,206	6,291	26,205	24,836	16,361	41,197	1,591
28. Ross and Cromarty	6,051	2,070	168	8,289	17,977	8,315	18,640	44,932	218,967	107,787	326,754	5,360
29. Roxburgh	3,638	587	140	4,365	4,564	4,933	7,432	16,929	287,633	235,273	522,906	3,730
30. Selkirk	602	95	19	716	1,259	439	1,371	3,069	103,967	81,833	185,800	445
31. Stirling	3,501	1,469	149	5,119	11,694	8,911	12,749	33,354	80,637	50,972	131,609	2,479
32. Sutherland	2,188	468	48	2,704	5,769	1,896	4,835	12,500	146,840	63,902	210,742	1,049
33. Wigtown	4,119	2,080	281	6,480	23,132	8,631	17,270	49,033	79,179	46,878	126,057	9,967
Total	148,777	50,941	6,786	206,504	428,256	263,411	515,333	1,207,000	4,689,601	2,776,818	7,466,419	144,615

TABLE No. 7.—QUANTITIES AND VALUES OF CORN, MEAT, FOOD PRODUCTS, in the Year 1896, with the

[*From Trade and*

	Quantities.			Values.		
	1894.	1895.	1896.	1894.	1895.	1896.
ANIMALS, LIVING (for food):—	No.	No.	No.	£	£	£
Oxen and bulls . .	471,794	413,337	558,361	8,225,067	7,150,812	9,241,455
Cows	3,513	1,880	3,987	59,298	31,049	62,231
Calves . . .	133	348	205	679	1,179	1,369
Total cattle .	475,440	415,565	562,553	8,285,044	7,183,040	9,305,055
Sheep and lambs .	484,597	1,065,470	769,592	804,823	1,782,544	1,133,634
Swine	8	321	4	16	668	10
Total value .	..	..	..	9,089,883	8,966,252	10,438,699
CORN:—	Cwt.	Cwt.	Cwt.	£	£	£
Wheat . . .	70,126,232	81,749,955	70,027,880	18,760,505	22,581,176	21,678,704
Wheat meal and flour	19,134,605	18,368,410	21,293,220	7,994,673	7,679,013	9,216,048
Barley . . .	31,241,384	23,618,867	22,476,702	7,090,579	5,538,405	5,703,318
Oats	14,979,214	15,528,310	17,585,130	3,900,096	3,723,465	4,225,576
Peas	2,272,623	2,422,851	3,018,357	647,194	698,828	852,465
Beans . . .	5,259,895	4,130,538	3,102,990	1,346,096	1,079,780	837,417
Maize	35,365,043	33,944,350	51,772,100	7,952,238	7,808,860	9,423,554
Maize-meal . .	87,120	164,179	368,100	40,968	75,523	123,313
Other kinds of corn and meal	..	..	..	487,876	593,248	732,302
Total value .	..	..	..	48,220,225	49,723,293	52,792,697
MEAT:—	Cwt.	Cwt.	Cwt.	£	£	£
Beef, salted . .	242,311	219,956	247,267	342,814	286,511	303,433
" fresh . .	2,104,104	2,191,037	2,659,700	4,213,688	4,275,548	5,028,828
Mutton, fresh . .	2,295,066	2,611,435	2,805,158	4,341,227	4,595,678	4,718,576
Bacon . . .	3,689,604	4,063,418	4,549,526	8,083,887	7,925,979	7,854,515
Hams	1,129,784	1,289,518	1,459,412	2,771,828	2,898,018	3,136,089
Pork, salted (not Hams)	225,019	220,168	255,339	335,556	269,829	291,966
Pork, fresh . .	180,383	288,284	299,411	436,546	664,946	687,241
Meat, unenumerated —salted or fresh	189,757	237,468	280,125	410,724	490,650	555,562
Meat preserved otherwise than by salting	554,366	856,153	701,970	1,490,902	2,040,006	1,775,178
Rabbits . . .	108,476	120,279	170,873	297,818	315,504	401,614
Total of dead meat	10,718,870	12,097,716	13,518,781	22,724,990	23,762,759	24,753,002
DAIRY PRODUCE:—	Cwt.	Cwt.	Cwt.	£	£	£
Butter . . .	2,574,835	2,825,662	3,037,947	13,456,699	14,245,230	15,344,083
Margarine . . .	1,109,325	940,168	925,934	3,044,810	2,557,170	2,498,425
Cheese . . .	2,266,145	2,133,819	2,244,535	5,474,940	4,675,130	4,900,428
Total .	5,950,305	5,899,649	6,208,416	21,976,449	21,477,530	22,742,936

AND ARTICLES AFFECTING AGRICULTURE, imported into the United Kingdom
Corresponding Figures for 1894 and 1895.

Navigation Returns.]

	Quantities.			Values.		
	1894.	1895.	1896.	1894.	1895.	1896.
POULTRY, &c. :—						
Poultry and game, alive or dead	..	..	..	£ 480,884	£ 605,160	£ 605,458
Eggs	Gt. Hunds. 11,876,968	Gt. Hunds. 12,722,586	Gt. Hunds. 13,244,893	3,786,329	4,003,446	4,184,567
Total value .	..	..	..	4,267,213	4,608,606	4,790,025
FRUIT, VEGETABLES, &c. :—						
Apples . . .	Bushels. 4,968,669	Bushels. 3,292,262	Bushels. 6,177,192	£ 1,389,421	£ 960,273	£ 1,582,471
Cherries . . .	311,215	195,632	219,367	160,899	96,047	105,811
Plums . . .	777,411	401,080	560,246	302,105	166,045	241,782
Pears	1,310,074	407,146	483,823	411,316	166,696	206,674
Grapes . . .	832,893	865,287	883,254	470,428	486,981	442,830
Oranges and lemons .	7,882,994	8,874,209	8,890,887	2,206,217	2,476,510	2,369,675
Unenumerated . .	1,300,518	1,249,563	1,427,105	563,859	513,261	590,826
Onions . . .	5,288,512	5,734,768	6,085,505	765,040	696,428	681,879
Potatoes . . .	Cwt. 2,703,808	Cwt. 3,758,156	Cwt. 2,244,627	1,030,091	1,169,022	907,875
Vegetables, unenumerated (raw)	..	..	..	1,090,370	1,277,206	1,284,634
Hops	189,155	217,161	207,041	774,378	644,505	591,582
Total value .	..	..	..	9,170,124	8,653,934	9,006,039
OTHER ARTICLES :—						
Lard	Cwt. 1,400,516	Cwt. 1,742,688	Cwt. 1,739,723	£ 2,758,416	£ 2,941,941	£ 2,268,029
Wool, sheep and lambs'	Lb. 700,550,262	Lb. 770,955,203	Lb. 713,579,173	24,791,160	26,025,960	24,958,346
Wood and timber—						
Hewn . . .	Loads. 2,338,062	Loads. 2,260,761	Loads. 2,433,795	4,187,763	4,181,436	4,889,398
Sawn or split, planed or dressed	5,446,487	5,061,986	6,082,222	11,899,533	10,695,916	13,380,060
Staves . . .	132,145	144,751	138,399	541,797	594,615	655,248
Oilseed cake . .	Tons. 274,351	Tons. 313,618	Tons. 316,071	1,707,358	1,603,650	1,588,214
Seeds—						
Clover and grass .	Cwt. 345,118	Cwt. 396,280	Cwt. 405,071	825,155	855,524	787,764
Cotton . . .	Tons. 366,886	Tons. 374,111	Tons. 368,369	2,052,085	1,750,437	1,720,322
Flax and linseed .	Qrs. 2,087,969	Qrs. 1,969,987	Qrs. 2,578,864	3,941,995	3,360,113	4,022,670
Rape . . .	299,046	325,393	180,270	319,189	307,348	196,237
Bones (whether burnt or not) . . .	Tons. 88,664	Tons. 74,056	Tons. 66,681	412,529	320,051	251,866
Guano . . .	28,582	49,842	20,214	146,361	392,309	104,554
Cotton, raw . .	Cwt. 15,965,326	Cwt. 15,687,881	Cwt. 15,668,663	32,944,341	30,429,428	36,272,039
Hemp . . .	1,070,820	1,959,020	1,834,340	1,897,943	2,087,667	1,951,480
Flax	1,434,020	2,052,440	1,903,980	2,525,195	3,270,840	3,117,316
Hides untanned—						
Dry	419,205	491,547	369,063	988,912	1,153,757	905,427
Wet	608,584	771,133	604,728	1,242,168	1,650,369	1,319,501
Petroleum . . .	Gallons. 163,002,262	Gallons. 177,146,618	Gallons. 189,653,941	2,484,976	3,368,904	3,722,056

TABLE No. 8.—NUMBER AND VALUE OF LIVE CATTLE, SHEEP, AND SWINE imported into the United Kingdom in the undermentioned Years.

[*From Trade and Navigation Returns.*]

	Number.			Value.		
	1894.	**1895.**	**1896.**	**1894.**	**1895.**	**1896.**
OXEN AND BULLS, from—				£	£	£
Channel Islands .	117	131	140	2,640	3,096	3,247
Canada . . .	80,450	95,747	99,188	1,315,779	1,589,934	1,576,050
United States . .	381,657	276,307	392,939	6,758,843	4,915,834	6,732,955
Argentine Republic .	9,534	39,436	65,698	147,237	613,681	923,625
Other countries .	36	1,716	396	568	28,267	5,578
Total . .	471,794	413,337	558,361	8,225,067	7,150,812	9,241,455
COWS, from—						
Channel Islands .	1,375	1,440	1,413	24,247	25,183	27,774
Canada . . .	1,868	234	2,400	30,581	3,338	31,842
United States . .	265	31	169	4,411	511	2,537
Other countries .	5	175	5	59	2,017	78
Total . .	3,513	1,880	3,987	59,298	31,049	62,231
CALVES, from—						
Channel Islands .	116	137	166	644	596	1,085
Canada . . .	5	12	3	13	32	7
United States . .	10	195	11	12	535	27
Other countries .	2	4	25	10	16	250
Total . .	133	348	205	679	1,179	1,369
SHEEP AND LAMBS, from—						
Canada . . .	135,622	214,310	83,767	236,103	387,181	125,956
United States . .	198,138	453,250	266,760	344,843	769,864	405,803
Argentine Republic .	73,446	308,094	339,381	127,797	505,537	501,712
Other countries .	77,391	89,816	* 79,684	96,080	119,962	* 100,163
Total . .	484,597	1,065,470	769,592	804,823	1,782,544	1,133,634
SWINE (not separately enumerated)	8	321	4	16	668	10
TOTAL VALUE OF ANIMALS LIVING	...	...	...	9,089,883	8,966,252	10,438,699

* Imported chiefly from Iceland.

TABLE NO. 9.—QUANTITY AND VALUE OF CORN, &c., imported into the United Kingdom in the undermentioned Years.

[*From Trade and Navigation Returns.*]

	Quantities.		Values.	
	1895.	1896.	1895.	1896.
Wheat, from—	Cwt.	Cwt.	£	£
Russia	23,017,035	17,241,600	6,048,929	5,187,240
Germany	752,990	1,032,910	214,094	351,761
France	2,900	2,610	601	754
Turkey	1,300,230	1,930,400	331,675	604,485
Roumania	2,022,200	5,401,300	537,756	1,696,170
Egypt	2,590	30,000	692	8,602
United States—				
On the Atlantic	14,006,420	20,533,800	3,984,050	6,506,222
On the Pacific	13,077,700	10,161,000	3,776,917	3,198,728
Chile	1,038,900	1,936,100	303,728	594,996
Argentine Republic	11,400,360	4,927,600	3,142,378	1,439,715
British East Indies	8,802,950	2,112,940	2,342,132	625,092
Australasia	3,486,620	8,500	1,014,747	2,400
British North America	1,844,600	3,617,900	556,920	1,092,372
Other countries	994,460	1,091,220	276,557	370,167
Total	81,749,955	70,027,880	22,531,176	21,678,704
Wheat and flour, from—				
Germany	243,870	204,790	86,474	65,961
France	1,125,990	1,692,540	414,203	716,534
Austrian territories	1,305,760	1,388,300	706,818	768,396
United States	13,131,850	15,905,100	5,384,658	6,786,600
British North America	2,343,300	1,932,720	1,003,779	816,950
Other countries	217,640	169,770	83,081	61,607
Total	18,368,410	21,293,220	7,679,013	9,216,048
Barley	23,618,867	22,476,702	5,538,405	5,703,318
Oats	15,528,310	17,585,130	3,723,465	4,225,576
Peas	2,422,851	3,018,357	693,828	852,465
Beans	4,130,538	3,102,990	1,079,780	837,417
Indian corn or maize	33,944,350	51,772,100	7,808,860	9,423,554
Indian corn meal	164,179	368,100	75,523	123,313
Other kinds of corn and meal	...	...	593,243	732,302
Total of corn, &c.	...	...	49,723,293	52,792,697

TABLE No. 10.—QUANTITY AND VALUE OF DEAD MEAT imported into the United Kingdom in the undermentioned Years.

[*From Trade and Navigation Returns.*]

	Quantities.		Values.	
	1895.	1896.	1895.	1896.
BACON, from—	Cwt.	Cwt.	£	£
Denmark	1,013,930	1,222,114	2,504,697	2,791,794
Germany	282	512	669	997
Canada	268,886	456,723	500,835	695,643
United States	2,649,482	2,751,518	4,586,089	4,066,708
Other countries	130,838	118,659	333,689	209,373
Total	4,063,418	4,540,526	7,925,970	7,854,515
BEEF (salted), from—				
United States	212,048	240,361	274,613	294,284
Other countries	7,908	6,906	11,898	9,149
Total	219,956	247,267	286,511	303,433
BEEF (fresh), from—				
United States	1,649,473	2,074,644	3,450,184	4,216,247
Other countries	541,564	585,056	825,364	812,581
Total	2,191,037	2,659,700	4,275,548	5,028,828
HAMS, from—				
Canada	81,707	169,276	186,141	365,422
United States	1,203,157	1,285,976	2,697,486	2,758,474
Other countries	4,654	4,160	14,391	12,193
Total	1,289,518	1,459,412	2,898,018	3,136,089
MEAT (unenumerated, salted or fresh), from—				
Holland	151,117	164,012	320,821	346,770
United States	37,301	60,610	65,611	99,058
Other countries	49,050	55,503	104,218	109,734
Total	237,468	280,125	490,650	555,562
MEAT, preserved otherwise than by salting—				
Beef	470,739	401,281	1,164,491	1,052,401
Mutton	200,471	122,851	334,607	201,841
Other sorts	184,943	177,838	540,908	520,936
Total	856,153	701,970	2,040,006	1,775,178
MUTTON (fresh), from—				
Germany	6,562	3,610	15,730	9,050
Holland	167,228	220,283	370,746	515,864
Australasia	1,670,968	1,853,120	3,107,156	3,105,313
Argentine Republic	715,296	801,733	1,000,050	1,071,891
Other countries	51,381	7,403	101,906	16,458
Total	2,611,435	2,895,158	4,595,678	4,718,576
PORK (salted, not Hams), from—				
United States	122,902	137,673	170,324	176,079
Other countries	97,266	117,666	99,505	115,887
Total	220,168	255,339	269,829	291,966
PORK (fresh), from—				
Holland	245,726	244,344	568,869	556,527
Belgium	27,150	39,208	67,280	98,340
Other countries	15,408	15,859	28,797	32,374
Total	288,284	299,411	664,946	687,241
RABBITS, from—				
Belgium	86,057	91,595	234,298	251,109
Other countries	34,222	79,278	81,296	150,505
Total	120,279	170,873	315,594	401,614
Total of dead meat	12,097,716	13,518,781	23,762,759	24,753,002

TABLE No. 11.—QUANTITIES AND VALUES OF BUTTER, MARGARINE, CHEESE, AND EGGS imported into the United Kingdom in each Year from 1894 to 1896 inclusive.

[*From Trade and Navigation Returns.*]

	QUANTITIES.			VALUES.		
	1894.	**1895.**	**1896.**	**1894.**	**1895.**	**1896.**
BUTTER from—	Cwt.	Cwt.	Cwt.	£	£	£
Sweden . .	266,306	310,809	323,829	1,413,779	1,644,111	1,664,685
Denmark .	1,102,493	1,162,770	1,228,784	5,843,954	5,948,463	6,288,407
Germany .	137,755	112,338	107,825	702,960	565,093	536,246
Holland . .	165,157	191,201	234,469	831,951	939,326	1,156,736
France . .	424,645	454,843	467,601	2,351,867	2,443,734	2,537,690
New S. Wales	34,581	45,837	7,777	165,875	203,938	37,691
Victoria . .	190,398	212,797	154,865	938,101	982,682	769,695
New Zealand .	65,626	53,262	56,373	318,575	232,009	277,898
Canada . .	20,887	38,949	88,357	90,121	153,401	339,744
United States .	29,996	66,932	141,553	125,947	271,776	617,525
Other countries	136,991	175,924	226,514	673,569	860,697	1,117,766
Total .	2,574,835	2,825,662	3,037,947	13,456,699	14,245,230	15,344,083
MARGARINE from—	Cwt.	Cwt.	Cwt.	£	£	£
Norway . .	10,330	9,377	10,158	29,369	25,259	28,102
Holland . .	1,045,330	878,827	861,887	2,834,804	2,371,711	2,304,335
France . .	29,052	28,132	30,523	115,709	99,733	104,556
Other countries	24,613	23,832	23,366	64,928	60,467	61,432
Total .	1,109,325	940,168	925,934	3,044,810	2,557,170	2,498,425
CHEESE from—	Cwt.	Cwt.	Cwt.	£	£	£
Holland . .	298,693	305,920	292,988	760,835	774,790	734,641
France . .	52,969	56,393	45,676	163,335	175,541	139,532
Australasia .	54,378	92,759	55,149	137,520	219,645	115,479
Canada . .	1,142,104	1,150,018	1,234,297	2,688,946	2,335,548	2,589,301
United States .	672,347	500,419	581,187	1,608,405	1,099,283	1,234,037
Other countries	45,654	28,310	35,238	115,899	70,323	87,438
Total .	2,266,145	2,133,819	2,244,535	5,474,940	4,675,130	4,900,428
EGGS from—	Great Hundreds.	Great Hundreds.	Great Hundreds.	£	£	£
Russia . .	1,369,959	2,229,930	2,406,168	383,639	601,460	630,002
Denmark .	1,254,914	1,279,013	1,566,623	422,790	447,709	522,985
Germany .	3,361,188	3,406,578	2,930,486	937,087	916,821	782,121
Belgium . .	2,954,843	2,361,680	2,243,789	885,136	713,464	694,283
France . .	2,440,559	2,730,332	3,275,776	982,800	1,069,580	1,273,200
Canada . .	254,604	436,903	500,319	92,644	156,653	178,931
Other countries	240,901	278,150	321,732	82,233	97,759	103,045
Total .	11,876,968	12,722,586	13,244,893	3,786,329	4,003,446	4,184,567

TABLE No. 12.—PRICES OF LIVE STOCK IN 1894, 1895, AND 1896, as returned under the Markets and Fairs (Weighing of Cattle) Act, 1891.

[*From Journal of the Board of Agriculture.*]

NUMBER OF ANIMALS REPORTED AS ENTERING THE 19 SCHEDULED PLACES IN GREAT BRITAIN, TOGETHER WITH THE NUMBERS WEIGHED AND THE NUMBERS PRICED.

ANIMALS.	1896.	1895.	1894.
CATTLE :—	No.	No.	No.
Entering markets	1,100,014	1,186,149	1,203,533
Weighed	109,184	100,033	96,344
Prices returned	99,537	88,403	84,593
Prices returned with breed and quality distinguished	75,014	64,072	58,559
SHEEP :—			
Entering markets	4,309,943	4,330,256	4,649,277
Weighed	41,685	34,886	39,210
Prices returned with breed and quality distinguished	35,048	23,577	26,072
SWINE :—			
Entering markets	232,344	233,189	139,187
Weighed	4,585	2,803	2,498
Prices returned	1,686	1,226	523
Prices returned with breed and quality distinguished	1,686	17	56

CALCULATED AVERAGE PRICE PER LIVE CWT. IN TEN SELECTED PLACES.

(*Obtained by dividing the total price by the total weight of the weighed animals of all descriptions in each of the three qualities or grades.*)

PLACES.	Inferior or third quality.		Good or second quality.		Prime or first quality.	
	1896.	1895.	1896.	1895.	1896.	1895.
	Per cwt. s. d.	Per cwt. s. d.	Per cwt. s. d.	Per cwt. s. d.	Per cwt. s. d.	Per cwt. s. d.
ENGLAND :—						
Leeds	26 10	...	29 2	...	32 2	...
Liverpool	...	...	28 4	27 10	32 4	33 8
London	27 8	29 6	32 8	34 4	37 0	38 0
Newcastle . . .	26 0	...	30 4	33 0	33 10	35 4
Shrewsbury . . .	25 0	25 10	30 0	30 6	34 4	33 10
SCOTLAND :—						
Aberdeen	23 8	25 3	31 6	32 9	34 10	36 8
Dundee	25 2	27 3	31 4	33 2	33 6	35 3
Edinburgh . . .	27 2	28 7	32 6	34 6	33 4	35 1
Glasgow	...	33 6	31 4	35 4	35 0	36 8
Perth	29 10	31 10	31 10	33 5	33 10	35 11

TABLE No. 13.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS imported into Great Britain from Ireland in each of the Years 1890-96.

	1890.	1891.	1892.	1893.	1894.	1895.	1896.
HORSES :—							
Stallions . .	105	125	113	151	163	188	191
Mares . .	14,625	14,055	14,273	13,356	14,484	15,370	18,046
Geldings . .	19,422	19,216	18,095	16,883	18,942	19,002	21,619
Total . .	34,152	33,396	32,481	30,390	33,589	34,560	39,856
CATTLE: Oxen, Bulls, and Cows—							
Fat . . .	216,339	240,183	256,538	316,344	330,748	302,555	274,472
Store . . .	360,758	323,075	305,373	318,545	422,534	414,859	349,800
Other cattle .	1,152	3,985	6,278	8,478	7,805	5,622	3,837
Calves . .	53,449	63,559	56,268	45,307	65,867	68,571	53,451
Total . .	631,698	630,802	624,457	688,669	826,954	791,607	681,560
SHEEP :—							
Sheep . . .	387,220	569,698	713,528	705,299	574,471	351,975	397,164
Lambs . .	249,761	323,477	366,674	402,661	382,630	300,603	340,142
Total . .	636,981	893,175	1,080,202	1,107,960	957,101	652,578	737,306
PIGS :—							
Fat . . .	543,417	459,596	457,977	405,242	515,647	500,700	574,677
Store . . .	59,745	43,988	42,974	51,329	69,320	46,520	35,912
Total . .	603,162	503,584	500,951	456,571	584,967	547,220	610,589

TABLE No. 14.—RETURN OF THE AVERAGE PRICES OF WOOL in the Years 1893 and 1894.

Years.	Australian.	South African.	British Fleeces.
	Per lb. s. d.	Per lb. s. d.	Per lb. s. d. s. d.
1894	0 8½	0 9¼	0 5 to 1 1
1895	0 8	0 9¼	0 5 " 1 0½

EDINBURGH CORN-MARKET GRAIN TABLES for Wheat, Barley, Oats, and Beans, showing the Quantity offered for Sale, the Quantity Sold, the Highest, Lowest, and Average Prices; also the Bushel-weights of the Highest and Lowest Prices of each kind of Grain for every Market-day, likewise the Results for every Month, and the final Result for the year 1896.

WHEAT.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel-weights for Highest Price.		Table of Bushel-weights for Lowest Price.	
1896 Jan.	Imp. qr.	Imp. qr.	s. d.	s. d.	s. d.	lb.	lb.	lb.	lb.
8	181	125	28 0	25 6	26 7		63		63
15	218	140	27 6	26 0	26 11		62½	62	62¾
22	263	197	28 0	21 0	26 8		62½		56
29	290	205	28 6	26 0	27 2		63		62
	952	667	27 11	25 2	26 10				
Feb. 5	263	247	30 0	26 6	27 9		63¼		62
12	231	191	29 0	27 0	27 11		63		62
19	259	243	29 0	23 0	27 4		64½		58½
26	432	395	28 6	27 0	28 0		63		62
	1,185	1,076	28 11	25 6	27 10				
March 4	349	349	29 0	26 0	27 11		64		61½
11	258	218	29 0	26 0	27 3		64½		63¼
18	272	192	28 0	26 6	27 3		64½	62	63
25	269	145	27 0	26 0	26 2		63¼	62	63¾
	1,148	904	28 7	26 1	27 4				
April 1	162	150	27 3	24 0	26 3		64		62
8	183	69	27 0	26 6	26 11		63		63
15	181	181	28 3	26 0	27 3		64		62½
22	419	303	27 6	24 6	26 2		64½		62
29	718	598	27 6	25 0	26 8		64	62	63
	1,663	1,301	27 6	24 11	26 7				
May 6	992	561	27 6	25 0	26 4		64½		62
13	406	338	27 0	20 0	26 2	64	64½		58½
20	517	462	26 6	19 0	26 0		64		62
27	513	503	27 3	25 0	26 3		64½		63
	2,428	1,864	27 1	24 1	26 2				
June 3	233	198	27 6	26 0	26 10	63	64¾		63½
10	792	652	27 0	24 0	25 9		64		60¼
17	672	527	27 0	24 0	25 3		65		60¾
24	532	360	26 0	22 0	24 10		64½		62
	2,229	1,737	26 11	24 1	25 7				
July 1	161	121	25 0	24 0	24 9	62½	63		62
8	186	186	26 0	23 6	25 2		65		60½
15	295	245	25 6	24 6	25 0		63		63
22	706	536	25 9	23 6	24 10		64½		63
29	1,364	984	26 6	23 9	24 8		64		63½
	2,712	2,072	25 7	24 0	24 9				

WHEAT—*continued*.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel-weights for			
						Highest Price.		Lowest Price.	
1896 Aug.	Imp. qr.	Imp. qr.	s. d.	s. d.	s. d.	lb.	lb.	lb.	lb.
5	640	544	25 6	23 6	24 7		64½	61½	63
12	1,637	951	25 0	22 0	24 3	63	64		60½
19	1,119	866	25 0	22 0	24 8		64½		61
26	430	355	25 6	21 0	24 6	63	65½		62
	3,835	2,716	25 2	22 4	24 4				
Sept.									
2	311	116	25 6	23 0	24 9		63½		61½
9	238	203	26 0	25 0	25 6		64		63
16	91	48	28 0	23 6	24 8		63		60½
23	506	376	27 6	23 0	25 8		63		61½
30	739	392	30 0	23 6	26 9		63½		59
	1,885	1,135	26 5	24 2	25 10				
Oct.									
7	702	440	30 0	24 6	27 11	63	64½		60
14	783	568	33 9	25 0	29 8		65½		58½
21	1,187	595	36 6	26 0	32 3		65½	57	59½
28	1,235	506	36 0	26 6	31 4	63	65½		63
	3,907	2,109	31 9	25 8	30 5				
Nov.									
4	1,414	920	36 0	23 0	31 4		63		58½
11	1,374	983	35 0	24 6	32 2		63		59½
18	748	608	37 0	23 0	32 5	63	63½		63
25	457	217	37 0	24 0	30 5		63		57½
	3,993	2,728	36 0	23 8	31 9				
Dec.									
2	653	430	33 9	24 0	31 5		63½		59¼
9	808	680	36 0	29 0	31 9		63		62
16	683	430	33 3	25 0	29 4		63		58½
23	365	182	31 6	28 0	30 3		63½		63
30	243	183	32 0	26 0	30 3		63		58½
	2,702	1,905	32 4	26 5	30 10				
Result for year	28,639	20,214	27 10	24 8	27 7				

BARLEY.

1896 Jan.									
8	2,380	1,164	25 6	19 0	23 0		50¼		54
15	2,490	1,787	25 0	18 0	22 6		55		51½
22	2,150	973	25 0	18 6	22 2		58		56
29	2,203	841	25 0	19 6	22 4		56		56
	9,241	4,765	25 3	19 2	22 6				
Feb.									
5	1,921	1,030	24 0	18 0	22 0	56	57		52
12	1,835	809	24 3	18 0	22 5		56		53¼
19	2,912	1,130	24 0	19 0	21 3		57		53¼
26	2,208	1,119	25 0	19 0	21 9		56¾		55½
	8,876	4,088	24 3	18 8	21 10				

BARLEY—*continued.*

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.		Lowest Price.		Average Price.		Table of Bushel-weights for Highest Price.		Table of Bushel-weights for Lowest Price.	
1896 March	Imp. qr.	Imp. qr.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	lb.	lb.	lb.	lb.
4	2,134	852	25	6	18	6	22	6	56	57½		56
11	2,229	729	24	0	17	0	21	1		57½		51½
18	1,337	575	25	0	18	6	21	7		56		53¼
25	1,273	630	24	0	19	0	21	9		56		56
	6,973	2,786	24	6	18	5	21	9				
April												
1	603	469	24	0	20	0	21	8		56	53	55¼
8	784	517	26	0	20	3	21	8		57		56
15	597	452	25	0	20	9	22	9		56¾		56¾
22	569	467	24	6	20	0	22	6		56		56
29	827	666	24	0	20	0	22	4		56		54½
	3,380	2,571	24	7	20	2	22	2				
May												
6	411	326	23	6	18	6	22	3		56		51½
13	235	182	24	6	21	9	22	10		56		56
20	239	190	24	0	21	6	22	9		56¼		55
27	79	40	22	6	22	6	22	6		53½		53½
	964	738	23	7	21	8	22	7				
June												
3	132	97	24	0	20	6	23	0		56		56
10	29	29	22	0	20	0	21	8		56		51½
17	131	71	23	0	21	0	21	11		55	55	56
24	70	70	23	3	20	0	22	3		56		52½
	362	267	23	0	20	8	22	4				
July												
1	45	4	22	6	22	6	22	6		54		54
8	156	14	21	0	21	0	21	0		53		53
15	107	27	22	0	19	6	20	7		54		52½
22	80	20	21	6	21	6	21	6		53½		53½
29	200	85	21	6	21	0	21	4		58½		56
	588	150	21	6	20	11	21	2				
Aug.												
5	.	..	..		..		..			..		..
12	169	147	24	6	21	3	22	8		57		56
19	322	183	24	6	21	0	23	0		56½		54
26	651	311	26	0	21	0	24	1		55	55	56
	1,142	541	24	11	21	1	23	5				
Sept.												
2	1,065	597	26	0	20	0	23	2		56		56
9	824	796	26	0	18	6	22	10		56		52½
16	506	396	28	3	22	0	25	1		56		54
23	1,368	1,348	28	6	20	0	24	9	55	56		54
30	2,227	1,570	29	0	21	0	25	3	56	57		52½
	5,990	4,707	27	8	20	5	24	5				
Oct.												
7	2,605	1,389	29	6	20	0	25	2		55¼	52½	56
14	2,390	1,020	27	6	21	0	24	4		56		53½
21	3,147	1,974	30	0	21	0	24	6		56¼		54
28	2,169	1,167	27	6	20	0	24	0		56½		53
	10,311	5,550	28	4	20	7	24	6				

BARLEY—*continued.*

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.		Lowest Price.		Average Price.		Table of Bushel-weights for			
									Highest Price.		Lowest Price.	
1896	Imp. qr.	Imp. qr.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	lb.	lb.	lb.	lb.
Nov.												
4	2,775	1,070	28	0	21	0	24	5		57	53¾	55
11	2,859	1,209	27	6	20	0	24	0		56		56
18	3,836	900	26	0	12	0	22	3		56		46¼
25	3,671	1,983	28	0	17	0	22	10		56½		53½
	13,141	5,162	27	2	19	6	23	4				
Dec.												
2	3,528	1,977	28	0	19	0	22	6		56¼	53	55
9	3,010	1,435	28	0	19	0	23	0		57	53½	56
16	2,934	1,161	26	6	18	0	21	5		56		51
23	2,784	1,647	27	0	15	0	22	5		56½		54
30	1,729	1,462	28	0	19	6	22	8		57	52½	53¼
	13,985	7,682	27	5	18	11	22	5				
Result for year	74,953	39,107	25	10	19	10	23	0				

OATS.

1896												
Jan.												
8	3,568	2,086	20	6	15	0	18	1	44	44½		42
15	4,086	1,685	21	0	15	0	18	2	42	45		42
22	4,046	1,855	20	6	13	0	17	7	42	45		40
29	3,449	1,587	20	3	14	9	17	2		45		41¼
	15,149	7,213	20	8	14	9	17	9				
Feb.												
5	3,935	1,771	20	6	13	9	18	0	44½	45		41
12	3,830	1,377	21	0	15	0	17	11		44		41
19	5,153	2,803	22	6	15	0	17	9		44	41	42
26	4,751	1,966	21	6	15	3	18	2		45	41	42
	17,669	7,917	21	0	14	11	17	11				
March												
4	6,290	2,062	21	6	15	0	17	11	44	45	41	42
11	5,164	2,161	22	0	14	6	18	2		44½		42
18	5,482	1,913	21	6	14	9	17	5		44½	42	42½
25	4,235	1,423	22	0	14	0	18	3		44½		41
	21,171	7,559	21	8	14	9	17	11				
April												
1	3,652	1,603	21	0	14	0	17	10		44½		41
8	3,223	1,760	20	6	14	6	17	11		44½	40	42
15	2,676	1,235	22	0	14	9	18	7		46		40
22	3,686	1,203	21	6	15	0	17	10		45		41
29	3,370	1,618	22	6	15	6	18	0		46		41
	16,607	7,419	21	9	14	8	18	0				
May												
6	2,606	1,063	21	6	15	6	18	2		45¼		42
13	2,866	916	20	9	16	3	17	11		45	41	42
20	2,591	1,662	20	6	16	0	18	5		44		42
27	1,991	734	20	0	16	0	17	10		44½	42	42½
	10,054	4,375	20	9	16	0	18	2				

OATS—*continued.*

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.		Lowest Price.		Average Price.		Table of Bushel-weights for Highest Price.		Table of Bushel-weights for Lowest Price.	
1896 June	Imp. qr.	Imp. qr.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	lb.	lb.	lb.	lb.
3	2,526	1,125	20	3	15	9	18	6		45		41
10	1,979	1,225	20	6	16	0	18	8	44	44½		42
17	2,267	976	20	6	16	0	18	7		44½	42	42½
24	2,778	653	20	6	16	0	17	11		44½	42	42½
	9,550	3,979	20	5	16	0	18	6				
July 1	2,247	565	19	6	16	0	18	0		44	42	42¼
8	2,007	1,166	21	0	14	0	17	8		45½		42
15	1,932	672	20	6	15	0	18	0		44½		40½
22	2,357	1,005	20	0	15	0	17	6		44½		42
29	2,082	917	20	0	15	3	17	8		45		42
	10,625	4,325	20	1	15	3	17	9				
Aug. 5	2,055	1,220	19	6	16	6	18	4	44½	45		42¼
12	2,065	1,067	21	0	17	0	18	7		43½	40	43
19	2,037	1,537	21	9	16	6	18	11		45½		41
26	2,397	1,894	21	0	16	0	18	7	44½	46		40
	8,554	5,718	20	10	16	9	18	7				
Sept. 2	2,815	2,012	20	9	16	0	18	4		44½		40
9	1,900	1,400	21	0	15	6	18	8		44½		40½
16	2,036	1,608	22	0	17	0	19	0	44½	45¼	41	42
23	2,431	2,025	22	3	14	6	18	11		44		41
30	2,217	1,982	24	6	15	0	19	7		44½	40	41½
	11,399	9,027	21	8	16	1	18	11				
Oct. 7	2,633	2,230	25	0	14	6	19	10		44		42
14	3,096	2,026	26	6	15	6	20	6		45½	40	42
21	3,748	1,706	27	3	15	0	21	2		44½		41
28	3,767	2,071	26	0	15	3	19	11	44½	45¼		41
	13,244	8,033	26	0	15	2	20	4				
Nov. 4	3,492	1,654	25	6	15	9	19	8		45¼		39¾
11	3,801	1,510	24	0	15	0	19	5	43	44		41
18	4,439	1,502	26	0	13	0	18	0		44½		41
25	3,804	2,272	23	6	13	6	18	3		44	40	41
	15,536	6,938	24	9	14	8	18	9				
Dec. 2	3,566	1,675	23	6	14	0	17	11		44		40
9	3,485	1,465	24	6	13	0	17	6		44½		40
16	3,695	2,227	23	0	12	0	17	8		45		39¼
23	2,598	1,256	23	0	14	0	17	7		44½	40	42¼
30	2,622	1,136	22	9	14	0	17	7		45½		41
	15,966	7,759	23	1	13	10	17	8				
Result for year	165,524	80,262	21	6	15	5	18	5				

BEANS.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel-weights for Highest Price.	Table of Bushel-weights for Lowest Price.
1896	Imp. qr.	Imp. qr.	s. d.	s. d.	s. d.	lb. lb.	lb. lb.
Jan.							
8	18	7	29 6	..	29 6	65½	..
15	143	84	30 0	26 6	28 7	66½	63
22	89	36	34 0	28 6	30 1	66¼	64
29	106	65	30 0	28 0	29 0	63 65½	63
	356	192	30 5	27 6	29 0		
Feb.							
5	116	59	29 6	26 6	28 4	62¾	63
12	206	138	35 0	26 0	28 11	64¾	63
19	466	158	37 0	26 3	30 2	64¾	62¾ 63
26	454	113	37 0	27 6	30 2	64¾	63
	1,242	468	32 8	26 5	29 7		
March							
4	320	55	32 0	28 0	29 1	65½	64½
11	278	50	33 0	27 6	29 4	66½	62¾
18	170	73	30 6	26 0	28 6	65½	63
25	105	34	34 0	29 9	30 6	66½	64
	873	221	32 6	28 1	29 2		
April							
1	83	44	33 6	25 6	28 3	66½	63
8	27	12	32 6	..	32 6	66½	..
15	36	16	32 6	30 6	30 8	63	67
22	20	..	..	..	..	..	..
29	20	..	..	..	..	..	..
	186	72	32 9	28 9	29 6		
May							
6	47	47	29 0	..	29 0	63	..
13	20	..	..	..	..	..	..
20	10	..	..	..	..	..	..
27	..	..	..	..	..	..	..
	77	47	29 0	..	29 0		
June							
3	15	..	..	..	..	..	..
10	20	20	32 0	..	32 0	63	..
17	15	..	..	..	..	..	..
24	31	..	..	..	..	..	..
	81	20	32 0	..	32 0		
July							
1	15	5	30 3	..	30 3	64	..
8	..	..	..	..	..	..	..
15	22	..	..	..	..	..	..
22	..	..	..	..	..	..	..
29	..	..	..	..	..	..	..
	37	5	30 3	..	30 3		
Aug.							
5	34	34	29 9	..	29 9	63	..
12	..	..	..	..	..	..	..
19	..	..	..	..	..	..	..
26	25	..	..	..	..	..	.
	59	34	29 9	..	29 9		

BEANS—*continued.*

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Table of Bushel-weights for Highest Price.		Table of Bushel-weights for Lowest Price.	
1896	Imp. qr.	Imp. qr.	*s. d.*	*s. d.*	*s. d.*	lb.	lb.	lb.	lb.
Sept.									
2	..	..	..	..	..		..		..
9	..	..	..	..	..		..		..
16	..	..	..	..	..		..		..
23	..	..	..	..	..		..		..
30	..	..	..	..	..		..		..
	..	..	..	..	..				
Oct.									
7	22	22	30 0	..	30 0		63		..
14	..	..	..	..	..		..		..
21	21	21	32 0	..	32 0		63		..
28	..	..	..	..	..		..		..
	43	43	31 0	..	31 0				
Nov.									
4	73	27	32 0	31 6	31 7		63		63
11	78	67	33 0	30 0	30 7		64½		60½
18	26	..	..	..	..		..		..
25	47	5	34 0	..	34 0		63		..
	224	99	33 0	30 5	31 0				
Dec.									
2	81	16	32 0	..	32 0		63		..
9	54	16	33 0	..	33 0		63		..
16	33	15	32 0	..	32 0		64½		..
23	88	33	30 0	28 0	28 11	63	64		64½
30	50	15	25 6	..	25 6		62¾		..
	306	95	30 7	28 0	30 1				
Result for year	3,484	1,296	30 11	28 6	29 8				

PRICES OF SHEEP SINCE 1818. TABLE NO. 1.—CHEVIOT SHEEP.

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1818	28	0	to	30	0	not quoted.					8	0	to	10	0
1819	25	0	"	27	0	15	0	to	17	0	10	6	"	12	0
1820	20	0	"	25	0	16	0	"	17	0	10	0	"	11	0
1821	18	0	"	20	0	14	0	"	16	0	7	6	"	8	0
1822	12	6	"	18	0	8	0	"	8	6	4	6	"	0	0
1823	13	6	"	18	0	7	0	"	10	6	5	6	"	6	0
1824	14	0	"	19	0	7	0	"	9	0	4	6	"	6	0
1825	20	0	"	32	0	15	0	"	19	0	9	0	"	10	6
1826	17	6	"	21	6	13	0	"	15	0	7	0	"	7	6
1827	15	0	"	24	0	not quoted.					7	0	"	8	0
1828	18	0	"	27	6	12	0	to	15	0	7	0	"	8	3
1829	18	0	"	24	0	12	6	"	14	0	7	0	"	8	6
1830	15	0	"	21	0	8	0	"	11	0	6	0	"	6	9
1831	18	0	"	25	0	9	0	"	13	0	7	0	"	8	0
1832	19	0	"	24	0	11	0	"	16	0	7	0	"	9	0
1833	22	0	"	31	0	13	6	"	20	0	8	0	"	11	3
1834	22	0	"	31	0	13	6	"	21	0	9	0	"	11	6
1835	22	0	"	27	6	18	0	"	20	6	8	0	"	11	0
1836	24	0	"	31	6	16	0	"	19	0	10	0	"	14	0
1837	19	0	"	28	0	14	0	"	19	0	10	0	"	13	0
1838	23	0	"	30	6	17	0	"	22	0	12	0	"	14	0
1839	23	0	"	31	0	14	0	"	19	0	0	0	"	13	0
1840	24	0	"	33	0	15	0	"	23	0	7	0	"	11	6
1841	23	0	"	30	0	14	0	"	22	0	8	0	"	12	0
1842	22	6	"	28	0	13	0	"	17	0	7	6	"	10	0
1843	19	0	"	25	0	8	0	"	12	0	5	0	"	8	0
1844	21	0	"	29	0	10	0	"	16	0	8	0	"	10	6
1845	23	0	"	33	0	13	0	"	20	0	8	0	"	13	0
1846	24	0	"	33	6	14	6	"	21	6	10	0	"	14	6
1847	24	0	"	35	0	13	0	"	24	0	11	6	"	15	0
1848	23	0	"	34	6	13	0	"	28	0	11	6	"	15	0
1849	21	0	"	30	2	12	0	"	21	0	0	0	"	14	0
1850	20	6	"	29	6	12	0	"	20	0	8	0	"	13	0
1851	21	6	"	31	0	13	0	"	21	0	8	9	"	14	0
1852	21	0	"	32	0	15	0	"	23	0	8	0	"	14	0
1853	26	6	"	38	0	17	0	"	28	6	9	0	"	17	0
1854	25	0	"	36	0	17	0	"	26	0	9	0	"	16	6
1855	23	6	"	36	0	16	0	"	25	0	10	0	"	17	0
1856	22	0	"	35	6	15	6	"	24	0	10	0	"	15	0
1857	24	0	"	36	0	14	6	"	26	0	10	6	"	14	6
1858	24	0	"	34	6	14	0	"	24	6	10	6	"	14	0
1859	25	0	"	34	6	16	0	"	25	0	10	3	"	14	9
1860	26	0	"	38	0	17	6	"	27	6	12	6	"	17	6
1861	25	0	"	38	6	16	0	"	28	0	9	0	"	16	0
1862	27	0	"	37	6	17	6	"	28	0	10	0	"	16	0
1863	25	0	"	38	6	19	0	"	28	6	10	6	"	16	0
1864	31	0	"	41	0	21	0	"	31	6	14	0	"	18	0
1865	32	6	"	44	0	22	6	"	33	6	14	6	"	20	0
1866	37	0	"	50	0	29	0	"	42	6	15	0	"	26	0
1867	26	0	"	58	0	18	0	"	25	6	12	0	"	16	0
1868	30	0	"	32	0	15	6	"	21	0	7	6	"	13	0
1869	28	0	"	38	0	15	0	"	22	6	7	6	"	14	0
1870	35	6	"	43	0	18	0	"	28	0	10	0	"	17	0
1871	36	6	"	49	0	22	0	"	33	6	14	0	"	20	0
1872	45	0	"	56	0	32	0	"	42	0	16	0	"	22	0
1873	42	0	"	51	0	25	0	"	42	0	15	6	"	22	0
1874	33	6	"	44	6	21	0	"	36	0	12	0	"	17	0
1875	33	0	"	48	6	21	0	"	34	0	13	6	"	23	6
1876	40	0	"	52	6	23	0	"	30	0	13	6	"	25	0
1877	41	0	"	51	0	25	0	"	37	0	15	0	"	24	0
1878	35	6	"	48	0	23	6	"	35	0	14	0	"	22	0
1879	34	0	"	44	0	21	0	"	34	0	14	0	"	20	0
1880	30	0	"	43	6	20	0	"	30	0	12	6	"	20	0
1881	32	0	"	45	6	29	0	"	34	0	14	0	"	20	0
1882	40	0	"	51	0	30	0	"	40	0	14	0	"	20	6
1883	44	0	"	55	6	34	6	"	46	6	15	6	"	23	0
1884	36	0	"	47	6	29	6	"	41	6	12	6	"	20	0
1885	30	0	"	38	0	24	0	"	31	0	12	0	"	18	0
1886	32	0	"	40	0	21	0	"	29	0	12	6	"	19	0
1887	29	0	"	36	0	18	0	"	26	0	11	0	"	16	6
1888	30	0	"	38	0	19	0	"	27	0	12	0	"	17	6
1889	36	0	"	44	0	24	0	"	32	0	14	0	"	22	0
1890	31	0	"	40	0	22	0	"	30	0	12	6	"	20	0
1891	27	0	"	38	0	16	0	"	25	0	9	0	"	16	0
1892	22	0	"	30	6	13	0	"	22	0	5	0	"	11	0
1893	26	0	"	35	6	18	0	"	28	6	8	6	"	15	0
1894	26	0	"	37	0	20	0	"	31	0	10	6	"	18	6
1895	28	0	"	39	0	22	0	"	34	0	11	6	"	19	6
1896	24	6	"	34	0	19	0	"	30	6	9	0	"	16	6

TABLE NO. 2.—BLACKFACED SHEEP.

Year.	Wethers.					Ewes.					Lambs.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1819	22	0	to	24	0	12	0	to	15	0	8	0	to	9	0
1820	20	0	"	23	3	15	6	"	17	0	7	0	"	8	6
1821	18	0	"	20	0	12	0	"	13	0	6	0	"	7	0
1822	11	6	"	13	6	5	6	"	6	0	4	6	"	0	0
1823	12	0	"	16	0	5	0	"	6	6	4	0	"	5	3
1824	9	6	"	13	6	6	0	"	7	0	4	0	"	5	0
1825	22	0	"	26	0	11	0	"	13	6	6	0	"	9	0
1826	15	0	"	17	0	8	0	"	9	0	4	6	"	6	0
1827	14	0	"	18	6	7	0	"	10	0	6	0	"	7	6
1828	15	0	"	20	0	8	0	"	11	0	5	0	"	7	6
1829	14	0	"	18	0	9	0	"	10	0	6	0	"	7	0
1830	9	6	"	13	0	4	0	"	6	0	4	6	"	6	0
1831	13	0	"	17	0	5	0	"	7	6	5	0	"	6	6
1832	14	0	"	18	0	7	0	"	11	6	6	0	"	7	8
1833	16	0	"	24	0	7	6	"	12	0	6	6	"	9	0
1834	16	0	"	22	0	10	0	"	13	0	6	0	"	8	6
1835	15	0	"	18	9	10	0	"	13	0	7	0	"	8	0
1836	15	0	"	21	0	9	0	"	12	0	8	6	"	11	0
1837	13	0	"	16	0	8	0	"	12	0	8	0	"	9	6
1838	15	0	"	20	6	10	0	"	13	0	not quoted.				
1839	15	0	"	22	0	10	0	"	12	0	7	0	to	8	3
1840	15	0	"	22	6	11	0	"	12	0	7	0	"	9	3
1841	16	0	"	20	0	9	0	"	11	0	6	0	"	8	0
1842	14	0	"	19	0	7	6	"	8	0	5	6	"	7	0
1843	not quoted.					4	9	"	6	6	not quoted.				
1844	15	0	to	21	0	6	6	"	10	0	5	0	to	8	0
1845	14	0	"	23	0	8	0	"	12	0	6	0	"	8	0
1846	13	0	"	24	0	10	0	"	13	0	8	0	"	9	0
1847	20	6	"	25	0	10	0	"	14	0	8	6	"	9	6
1848	20	0	"	24	0	11	3	"	12	0	8	6	"	10	0
1849	not quoted.					not quoted.					7	0	"	7	6
1850			..					..			7	0	"	0	0
1851	17	6	to	23	0	9	0	to	12	0	6	6	"	8	0
1852	18	6	"	22	0	9	6	"	12	0	4	6	"	7	9
1853	23	0	"	27	0	14	6	"	16	6	8	0	"	11	6
1854	20	0	"	26	0	11	0	"	16	6	8	0	"	10	6
1855	23	6	"	26	6	14	0	"	16	0	10	0	"	11	0
1856	17	0	"	24	0	10	0	"	20	0	7	6	"	10	0
1857	20	0	"	29	0	10	6	"	15	0	9	3	"	11	0
1858	20	0	"	27	6	9	9	"	18	9	8	3	"	10	6
1859	20	0	"	25	0	10	0	"	14	0	8	9	"	11	0
1860	21	0	"	27	3	11	0	"	16	0	10	0	"	13	6
1861	21	0	"	29	0	12	0	"	22	0	6	3	"	14	0
1862	16	9	"	27	0	12	0	"	18	8	6	0	"	12	0
1863	20	0	"	30	6	13	0	"	16	0	8	0	"	11	6
1864	25	0	"	30	0	15	0	"	19	0	10	0	"	13	6
1865	15	6	"	32	6	15	0	"	25	0	10	0	"	17	0
1866	31	6	"	40	0	20	0	"	36	0	13	6	"	22	6
1867	20	0	"	30	6	14	0	"	22	0	7	6	"	13	6
1868	20	0	"	26	0	10	6	"	13	6	7	0	"	13	0
1869	22	0	"	28	0	11	0	"	14	0	6	9	"	9	0
1870	27	0	"	32	6	13	0	"	22	0	8	0	"	14	6
1871	23	0	"	37	0	13	0	"	23	0	11	0	"	16	3
1872	31	6	"	45	0	18	0	"	32	0	12	6	"	18	0
1873	28	0	"	39	0	16	6	"	27	0	7	0	"	16	0
1874	25	0	"	35	0	13	0	"	20	0	7	0	"	14	0
1875	26	6	"	37	6	15	0	"	21	3	9	6	"	17	6
1876	30	0	"	40	0	19	0	"	24	0	13	0	"	20	6
1877	35	0	"	38	9	18	0	"	25	0	13	6	"	23	0
1878	30	0	"	36	0	17	0	"	23	0	12	0	"	22	0
1879	25	0	"	35	9	16	0	"	24	0	10	6	"	20	0
1880	25	0	"	38	0	16	6	"	22	6	10	0	"	17	0
1881	30	0	"	39	0	15	0	"	23	0	10	0	"	15	0
1882	33	0	"	46	0	20	0	"	28	0	12	6	"	18	6
1883	36	0	"	50	6	24	6	"	33	0	14	0	"	21	6
1884	29	0	"	43	6	19	6	"	28	0	12	0	"	19	6
1885	24	0	"	34	0	13	0	"	22	6	10	0	"	15	0
1886	25	0	"	34	0	12	0	"	22	0	10	6	"	16	0
1887	22	0	"	30	0	11	0	"	19	0	8	0	"	13	0
1888	22	0	"	32	0	13	0	"	24	0	10	0	"	15	0
1889	26	0	"	40	0	18	0	"	20	0	13	0	"	22	0
1890	24	0	"	37	0	14	0	"	27	0	10	6	"	19	0
1891	21	0	"	37	0	10	0	"	24	0	7	6	"	15	0
1892	16	0	"	28	6	6	0	"	17	0	8	0	"	10	0
1893	21	0	"	37	0	12	0	"	24	0	7	0	"	14	6
1894	20	0	"	37	6	14	6	"	26	6	8	6	"	16	0
1895	23	0	"	41	0	16	0	"	28	6	9	0	"	17	0
1896	19	0	"	35	4	13	0	"	24	0	6	0	"	13	6

Table No. 3.—PRICE OF WOOL, per stone of 24 lb., since 1818.

Year.	Laid Cheviot.	White Cheviot.	Laid Highland.	White Highland.
	s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d.
1818	40 0 to 42 2	..	20 0 to 22 6	..
1819	21 0 " 22 0	..	10 0 " 10 3	..
1820	20 0 " 22 0	..	9 0 " 10 0	..
1821	18 0 " 20 0	..	9 0 " 10 0	..
1822	12 6 " 14 6	..	5 0 " 6 6	..
1823	9 0 " 10 6	..	5 0 " 5 9	..
1824	13 6 " 15 0	..	6 0 " 6 3	..
1825	10 6 " 22 0	..	10 0 " 10 6	..
1826	11 0 " 14 0	..	5 0 " 5 6	..
1827	11 0 " 14 0	..	5 6 " 6 9	..
1828	8 0 " 11 0	..	5 6 " 6 0	..
1829	8 6 " 11 0	..	4 3 " 0 0	..
1830	9 6 " 11 0	..	4 6 " 5 0	..
1831	17 0 " 20 0	..	7 6 " 8 6	..
1832	14 0 " 16 0	..	7 0 " 7 6	..
1833	18 0 " 20 7	..	10 0 " 11 0	..
1834	21 0 " 24 6	..	5 6 " 7 0	..
1835	19 0 " 20 6	..	9 6 " 10 8	..
1836	21 0 " 25 0	..	10 0 " 14 0	..
1837	12 0 " 14 0	..	7 0 " 7 8	..
1838	19 0 " 22 6	..	6 0 " 10 0	..
1839	18 0 " 20 0	..	8 0 " 12 0	..
1840	15 0 " 0 0	..	7 0 " 0 0	..
1841	15 0 " 16 9	..	6 0 " 7 .5	..
1842	12 6 " 14 0	..	not quoted.	..
1843	9 0 " 11 6	..	5 0 to 6 0	..
1844	15 0 " 18 0	..	not quoted.	..
1845	14 6 " 17 6	..	7 6 to 8 6	..
1846	12 0 " 14 6	..	8 0 " 8 6	..
1847	12 6 " 14 0	..	not quoted.	..
1848	9 6 " 11 0	..	4 9 to 0 0	..
1849	12 0 " 16 6	..	6 0 " 6 3	..
1850	15 0 " 17 6	..	8 0 " 8 6	..
1851	12 0 " 16 0	..	8 0 " 9 3	..
1852	13 0 " 15 0	..	8 0 " 9 0	..
1853	19 0 " 22 0	..	11 0 " 12 6	..
1854	12 0 " 15 0	..	7 6 " 8 6	..
1855	14 6 " 19 0	..	8 6 " 9 0	..
1856	19 0 " 21 6	..	11 0 " 0 0	..
1857	19 0 " 24 0	..	13 0 " 14 3	..
1858	15 0 " 17 0	..	8 9 " 10 0	..
1859	18 6 " 24 0	..	10 9 " 11 6	..
1860	22 0 " 32 0	37 0 to 38 0	10 0 " 11 3	..
1861	19 6 " 27 0	from 30s. upwards.	not quoted.	..
1862	18 6 " 26 0	30 0 to 37 0	11 6 to 16 0	..
1863	25 6 " 31 0	38 0 " 42 0	15 3 " 17 6	..
1864	31 0 " 39 0	47 0 " 54 0	17 6 " 20 0	..
1865	23 0 " 30 0	44 0 " 45 0	15 0 " 17 0	..
1866	24 0 " 30 0	30 0 " 38 0	14 0 " 16 0	..
1867	16 0 " 21 6	not quoted.	not quoted.	..
1868	19 0 " 26 0	28 0 to 32 0	8 6 to 9 0	..
1869	18 0 " 26 6	not quoted.	8 6 " 10 0	..
1870	15 0 " 23 6	25 0 to 26 0	9 6 " 0 0	..
1871	20 0 " 26 6	30 0 " 34 6	12 0 " 15 0	..
1872	26 0 " 37 6	40 0 " 48 0	18 0 " 21 0	..
1873	17 0 " 18 0	34 0 " 40 0	9 0 " 12 0	..
1874	18 6 " 26 6	30 0 " 34 0	9 6 " 13 0	..
1875	25 0 " 32 0	34 6 " 36 0	12 6 " 16 0	..
1876	20 0 " 24 0	30 0 " 34 6	9 6 " 12 0	..
1877	20 9 " 26 0	28 0 " 30 0	10 0 " 12 0	..
1878	18 9 " 25 0	27 0 " 32 0	8 6 " 11 6	..
1879	15 0 " 17 0	prices very low.	7 0 " 0 0	..
1880	20 0 " 24 0	30 0 to 32 0	10 6 " 11 6	14 0 to 15 0
1881	17 0 " 21 0	27 0 " 30 0	5 0 " 9 6	12 0 " 13 0
1882	14 0 " 18 0	27 6 " 28 0	7 6 " 9 0	13 0 " 14 0
1883	13 0 " 18 0	26 0 " 28 0	6 6 " 8 6	11 6 " 12 6
1884	13 0 " 18 0	26 0 " 28 0	6 6 " 8 6	11 6 " 12 6
1885	12 0 " 17 0	22 6 " 26 0	6 0 " 8 0	11 6 " 12 0
1886	13 0 " 18 0	23 0 " 27 6	6 6 " 8 6	11 6 " 12 0
1887	14 0 " 22 0	23 0 " 28 0	7 0 " 9 0	11 6 " 13 0
1888	13 0 " 20 0	23 0 " 28 0	7 0 " 9 0	11 0 " 12 6
1889	13 0 " 18 0	24 0 " 28 0	7 0 " 9 0	11 0 " 12 6
1890	13 0 " 18 0	24 0 " 28 0	7 0 " 9 0	11 0 " 12 6
1891	12 6 " 18 0	22 0 " 28 0	7 0 " 9 0	11 0 " 12 6
1892	12 0 " 18 0	20 0 " 28 0	7 0 " 8 6	10 6 " 12 0
1893	12 0 " 17 0	20 0 " 27 0	7 0 " 8 0	10 0 " 12 0
1894	12 0 " 16 0	20 0 " 26 0	7 0 " 8 0	10 0 " 12 0
1895	12 0 " 16 0	20 0 " 25 0	7 0 " 8 0	10 0 " 11 6
1896	11 0 " 15 0	19 0 " 24 0	7 0 " 8 0	10 0 " 11 6

Fig. 66.—SHORTHORN BULL, "CHAMPION CUP" 65,240.

Winner of President's Medal for best Shorthorn, Perth, 1896. The property of Mr G. Harrison, The Hall, Gainford, Darlington. Bred by Mr J. Deane Willis, Bapton Manor, Codford.

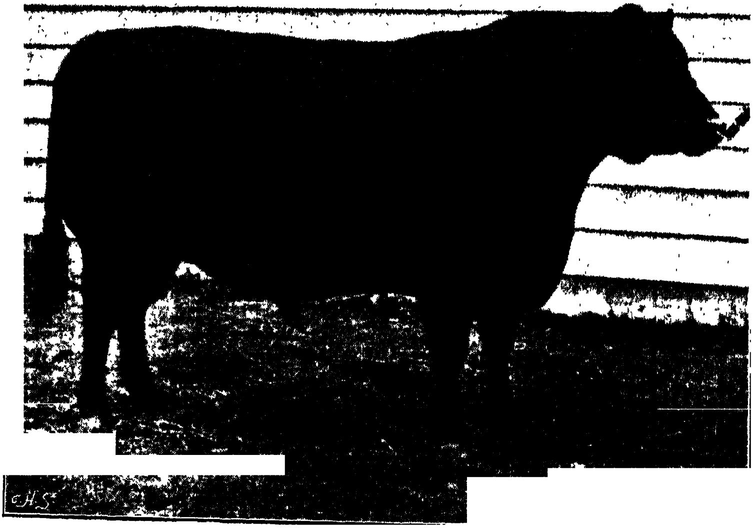

Fig. 67.—ABERDEEN-ANGUS BULL, "EQUESTRIAN" 9953.

Winner of President's Medal for best animal of the breed, Perth, 1896. The property of Mr G. Smith Grant, Auchorachan, Glenlivet. Bred by Sir George Macpherson Grant of Ballindalloch. Bart.

GENERAL SHOW AT PERTH, 1896.

THE sixty-ninth Show of the Society was held at Perth on the 21st July 1896 and three following days. The South Inch afforded an ideal site—abundant in extent, dry, level, and near to the railway station. Nearly 35 acres were enclosed, the general plan of the showyard being similar to that in recent years.

Heavy showers of rain fell on the opening day, but thereafter the weather was excellent. The attendance of the public far exceeded the most sanguine expectations. Exceptionally favourable arrangements were made by the railway companies for the conveyance of visitors to the Show, and the public availed themselves of these facilities to an extent that has rarely been equalled in the history of the Society. As would therefore be expected, and as will be seen from the Accounts for the year, the financial results of the Show proved to be eminently satisfactory. The receipts, it will be observed, are very much higher than at any former Show of the Society at Perth.

The local authorities co-operated most heartily with the Society in promoting the success of the Show. The Town Council of Perth granted the site and supply of water free of charge, and in every way facilitated the arrangements for the Show in the most cordial manner. The County Councils of Perth, Forfar, Fife, and Kinross contributed handsomely to the funds of the Show by means of the usual voluntary assessment on owners of lands and heritages.

The display of live stock was on the whole scarcely so large as usual; but in regard to merit it was decidedly above the average.

There was an extensive and interesting collection of implements and machines, and it is gratifying to be able to say that an unusually large amount of business was transacted in this department of the Show.

Statistics.

The following tables give the number of entries in the various sections:—

1. CATTLE.

Class.	SHORTHORN.	No. of Entries.
1.	Aged bulls	11
2.	Two-year-old bulls	12
3.	One-year-old bulls	12
4.	Cows of any age	10
5.	Two-year-old heifers	10
6.	One-year-old heifers	10
		65

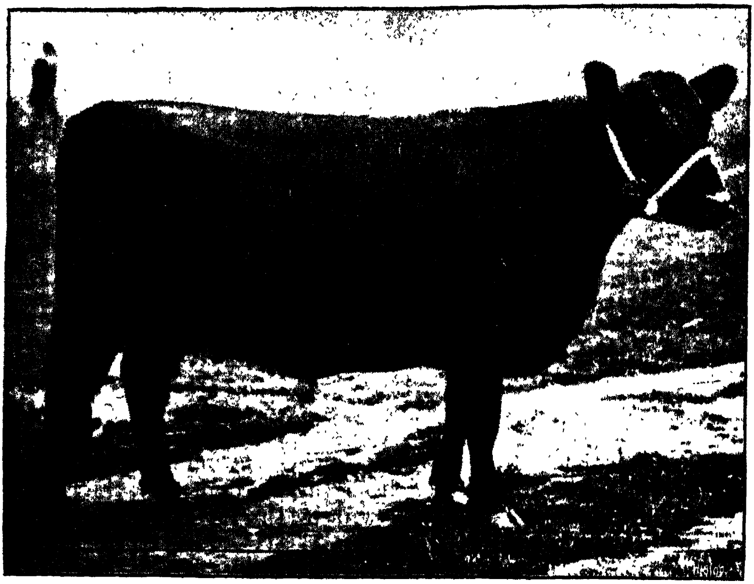

Fig. 68.—Galloway Cow, "Dora of Durhamhill" 13,550.

Winner of President's Medal for best Galloway, Perth, 1896. The property of Mr John Cunningham, Durhamhill, Dalbeattie. Bred by Mr James Cunningham, Tarbreoch.

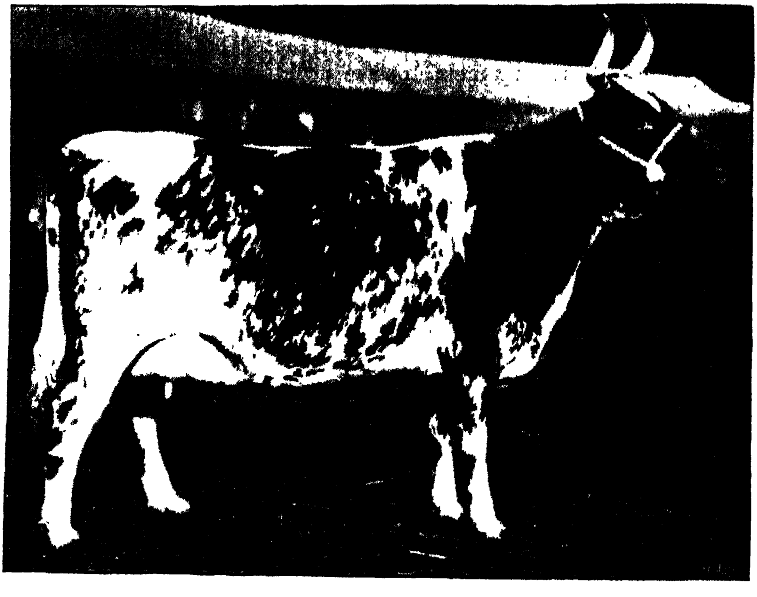

Fig. 69.—Ayrshire Cow, "Judy" 8058.

Winner of President's Medal for best Ayrshire, Perth, 1896. Bred by and the property of Mr Alex. Cross of Knockdon.

ABERDEEN-ANGUS.

7.	Aged bulls	8	
8.	Two-year-old bulls	7	
9.	One-year-old bulls	10	
10.	Cows of any age	17	
11.	Two-year-old heifers	11	
12.	One-year-old heifers	21	
	Extra stock	1	
		—	75

GALLOWAY.

13.	Aged bulls	4	
14.	Two-year-old bulls	2	
15.	One-year-old bulls	6	
16.	Cows of any age	8	
17.	Two-year-old heifers	5	
18.	One-year-old heifers	14	
		—	39

HIGHLAND.

19.	Aged bulls	6	
20.	Two-year-old bulls	8	
21.	One-year-old bulls	13	
22.	Cows of any age	12	
23.	Three-year-old heifers	9	
24.	Two-year-old heifers	8	
		—	56

AYRSHIRE.

25.	Aged bulls	2	
26.	Two-year-old bulls	4	
27.	One-year-old bulls	8	
28.	Cows in milk, of any age	11	
29.	Cows in calf, of any age, or heifer	8	
30.	Two-year-old heifers	5	
31.	One-year-old heifers	9	
		—	47

DAIRY COWS.

32.	Dairy cow, any pure breed or cross	No entry.	
33.	Shorthorn cow, any age, in milk	1	
34.	Aberdeen-Angus cow, any age, in milk	4	
		—	5
	Extra cattle		5
			292

2. HORSES.

DRAUGHT STALLIONS.

35.	Aged stallions	14	
36.	Three-year-old entire colts	13	
37.	Two-year-old entire colts	13	
38.	One-year-old entire colts	10	
		—	50

DRAUGHT GELDINGS.

39.	Aged geldings	5	
40.	Three-year-old geldings	4	
41.	Two-year-old geldings	2	
		—	11

DRAUGHT MARES AND FILLIES.

42.	Mares with foal at foot	12	
	Extra stock	1	
43.	Yeld mares	6	
	Extra stock	2	
44.	Three-year-old fillies	12	
45.	Two-year-old fillies	21	
46.	One-year-old fillies	17	
		—	71

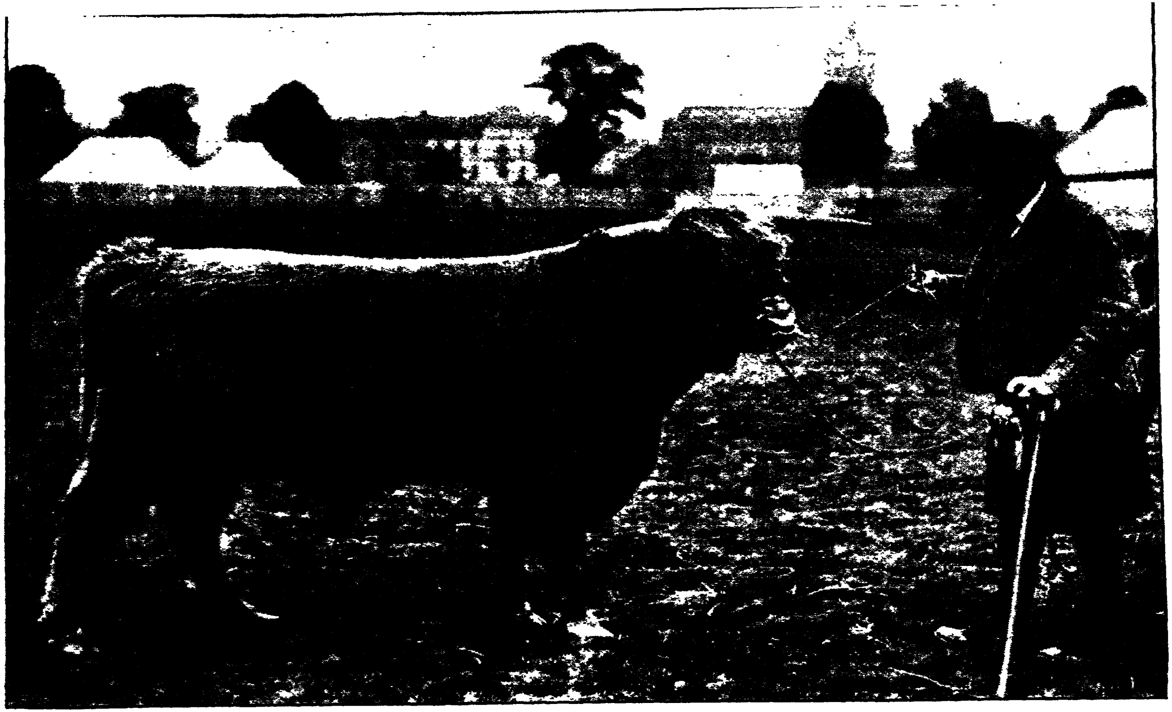

Fig. 70.—Highland Bull, "Laoich."

Winner of President's Medal as best animal of the breed, Perth, 1896. Bred by and the property of Mr John Stewart of Ensay.

HUNTERS AND ROADSTERS.

47. Colt, gelding or filly, foaled in 1895, the produce of thoroughbred stallions	6	
48. Mare or gelding for field, foaled in 1893	6	
49. Mare or gelding for field, foaled in 1894	4	
50. Hunter, mare or gelding, foaled before 1st Jan. 1893, able to carry over 14 stone	No entry.	
51. Hunter, mare or gelding, foaled before 1st Jan. 1893, able to carry from 12 to 14 stone	3	
52. Roadster, mare or gelding, foaled before 1st Jan. 1893, 15 hands and upwards	8	
53. Roadster, mare or gelding, foaled before 1st Jan. 1893, 14.2, and under 15 hands	6	
	—	33

HACKNEYS.

54. Brood mares, 15 hands and upwards, with foal at foot, or to foal this season to a registered sire	6	
55. Brood mares, under 15 hands, with foal at foot, or to foal this season to a registered sire	4	
56. Fillies, three years old	6	
57. Fillies, two years old	3	
58. Fillies, one year old	5	
59. Stallions, any age, over 14.2 hands	3	
Extra stock	1	
60. Entire colts, two years old	4	
61. Entire colts, one year old	3	
	—	35

PONIES.

62. Stallions, over 12 and not exceeding 14.2 hands	7	
63. Mares or geldings, between 13 and 14½ hands	9	
64. Mares or geldings, between 12 and 13 hands	8	
65. Stallion, under 12 hands	1	
66. Mares or geldings, under 12 hands	5	
67. Shetland stallions, above 3 years, not exceeding 10½ hands	7	
Extra stock	1	
68. Shetland mares, not exceeding 10½ hands, with foal at foot	10	
69. Shetland mare or gelding, above 3 years, 10½ hands	2	
	—	50

TURNS-OUT.

70. Turns-out of single horse, harness, and trap, 15 hands and upwards (8)	3	
71. Turns-out of single horse, harness, and trap, under 15 hands (11)	3	
	—	6
Extra horses		2
		258

3. SHEEP.

BLACKFACED.

72. Tups above one shear	13	
73. Shearling tups	18	
74. Ewes above one shear, with lambs	5	
75. Shearling ewes or gimmers	3	
	—	39

CHEVIOT.

76. Tups above one shear	12	
77. Shearling tups	11	
78. Ewes above one shear, with lambs	7	
79. Shearling ewes or gimmers	3	
	—	33

BORDER LEICESTER.

80. Tups above one shear	13	
81. Shearling tups	46	
82. Ewes above one shear	6	
83. Shearling ewes or gimmers	12	
	—	77

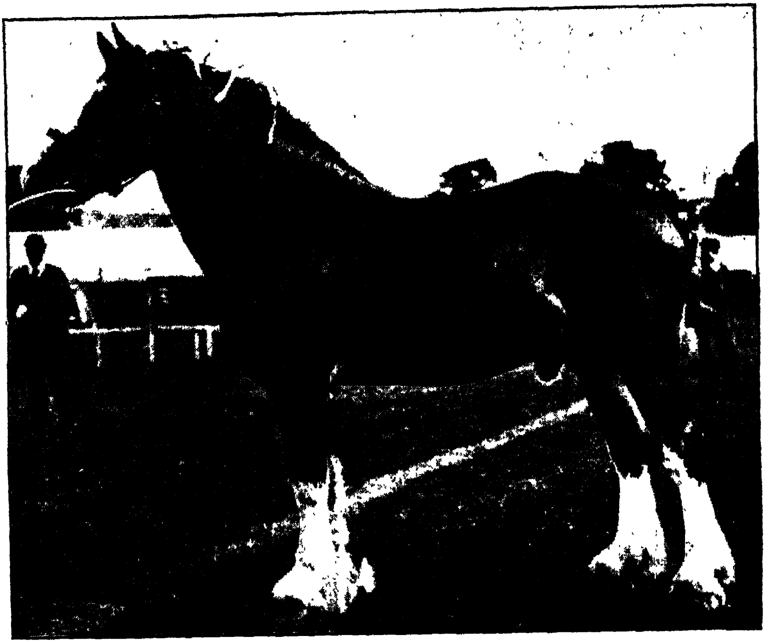

Fig. 71.—CLYDESDALE STALLION, "KING OF THE ROSES" 9927.

Winner of President's Medal for best Clydesdale Stallion, Perth, 1896. The property of Messrs A. & W. Montgomery, Netherhall and Banks, Kirkcudbright. Bred by Mr A. Currie, Ardbeg, Rothesay.

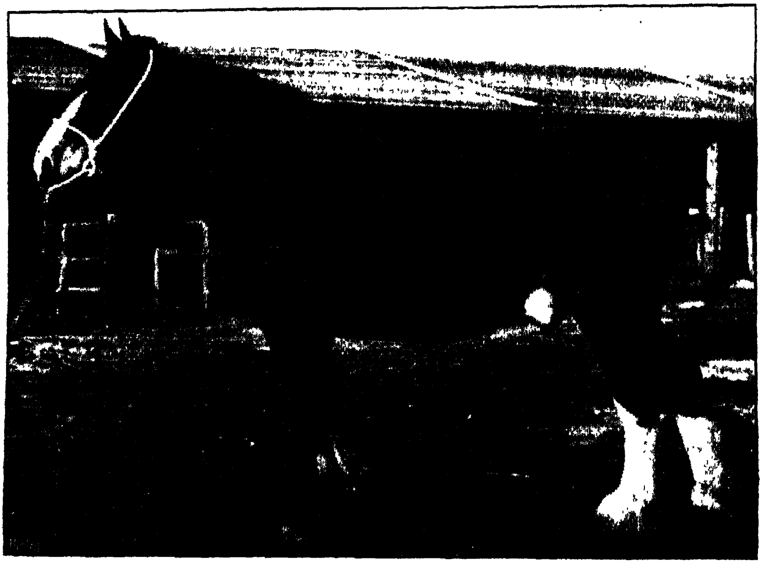

Fig. 72.—DRAUGHT GELDING, "THE BOSS."

Winner of President's Medal for best Draught Gelding, Perth, 1896. The property of Mr W. Clark, Netherlee, Cathcart. Breeder unknown.

Shropshire.

84. Tups above one shear	5	
85. Shearling tups	14	
86. Ewes above one shear	2	
87. Shearling ewes or gimmers	7	
	—	28

Extra Sections.

88. Blackfaced wethers, one shear	9	
89. Cheviot wethers, one shear	4	
90. Three shearling wethers, any cross	7	
91. Fat lambs, any breed or cross	6	
	—	26
Extra sheep		1
		204

4. SWINE.

92. Boars, large white breed	2	
93. Sows, large white breed	3	
94. Pigs not above 8 months old, large white breed	2	
95. Boars, white breed other than large	2	
96. Sow, white breed other than large	No entry.	
97. Pigs not above 8 months old, white breed other than large	1	
98. Boars, Berkshire breed	3	
99. Sows, Berkshire breed	5	
100. Pigs not above 8 months old, Berkshire breed	2	
	—	20

5. POULTRY.

1-80. Poultry	374

6. DAIRY PRODUCE.

1. Cured butter	14	
2. Powdered butter	13	
3. Fresh butter	18	
	—	45

7. HORSE-SHOEING.

1. Draught-horses	9	
2. Roadsters	4	
	—	13

ABSTRACT.

	No. of Entries.	Head.
1. Cattle	292	292
2. Horses	258	258
3. Sheep	204	362
4. Swine	20	30
	774	942
5. Poultry	374	
6. Dairy produce	45	
7. Horse-shoeing	13	

The following table gives a comparative view of the display of cattle, horses, sheep, swine, poultry, dairy produce, and im-

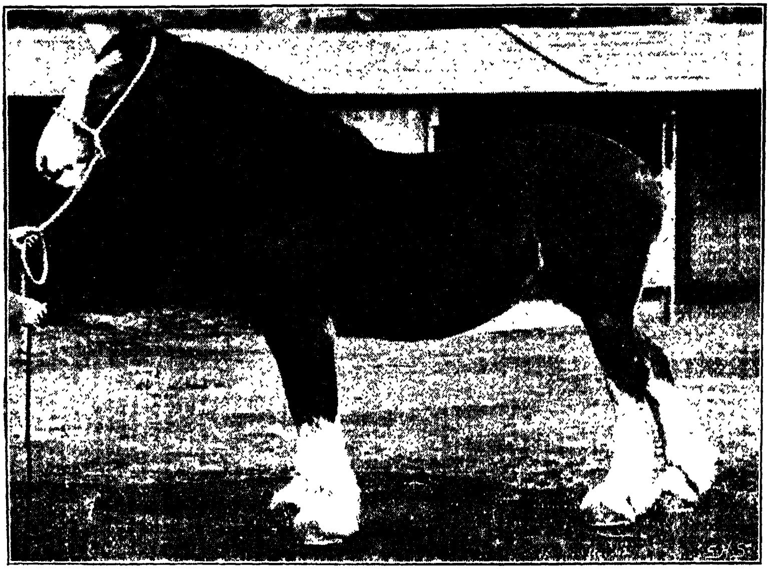

Fig. 73.—Clydesdale Mare, "Montrave Maud" 11,786.

Winner of President's Medal for best Clydesdale Mare or Filly, Perth, 1896. Bred by and the property of Mr John Gilmour of Montrave, Leven, Fife.

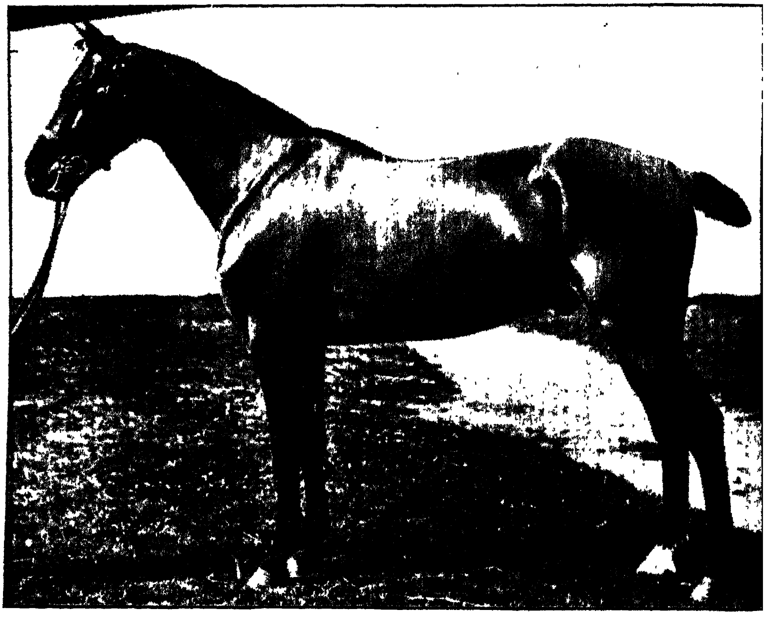

Fig. 74.—Hunter Gelding, "Warwick."

Winner of President's Medal for best Hunter, Perth, 1896. The property of Mrs John J. Moubray of Naemoor, Rumbling Bridge. Breeder unknown.

plements, of the value of the premiums offered, and of the receipts at the entrance-gates, grand stands, and for catalogues at the Shows which have been held at Perth:—

Year.	Cattle.	Horses.	Sheep.	Swine.	Poultry.	Dairy Produce.	Horse-shoeing.	Implements.	Premiums.	Receipts.
1829 . .	192	53	199	13	...	...	...	14	£357	£119
1836 . .	265	46	416	18	...	6	...	17	479	225
1852 . .	313	135	662	50	186	123	...	339	900	926
1861 . .	335	156	616	77	360	91	...	850	1500	1328
1871 . .	376	177	684	71	301	88	...	1948	1600	2270
1879 . .	383	253	470	56	200	49	...	2207	2629	3063
1887 . .	...	239	530	38	210	72	...	1509	2372	1841
1896 . .	292	258	362	30	374	45	...	1945	2205	4788

Cattle.

Although not large, the display of cattle was, all round, of high excellence. There was a creditable representation of all the breeds—amongst the prize-winners perhaps a higher standard of merit than in most recent years. Certainly the parades of prize cattle never made a more imposing appearance than on this occasion—that is, if the cattle classes are taken as a whole.

It is somewhat curious that the six classes of Shorthorns were all about equal in numerical strength—eleven entries in the class for aged bulls, twelve in each of the other two classes of bulls, and ten in each of the three female classes. Mr Harrison's well-known bull "Champion Cup" 65,240 (fig. 66) could not be denied the premier place. He has been the hero of many fights, and once more became the champion of the breed. He was bred by Mr J. Dean Willis, Bapton Manor, Codford, and got by "Challenge Cup" 57,029, and out of "Cineraria" by "Commodore" 54,118. The two-year-old and yearling bull classes showed high average merit. Mr Fletcher's first prize two-year-old bull "Watchword" 68,063 was a close "reserve" for the Champion medal. He is a very handsome roan, bred by Mr Duthie, Collynie, Tarves, and got by "Scottish Archer" 59,893. The classes of shorthorn cows and heifers were creditably filled, and for the prize tickets there were very close and interesting contests.

A capital collection of Aberdeen-Angus cattle faced the judges. There was high merit in all the classes, and of course exciting struggles for the honours. Colonel Smith Grant's "Equestrian" 9953 (fig. 67), the winner of the first prize in the old bull class at Dumfries in 1895, was exhibited as "Extra

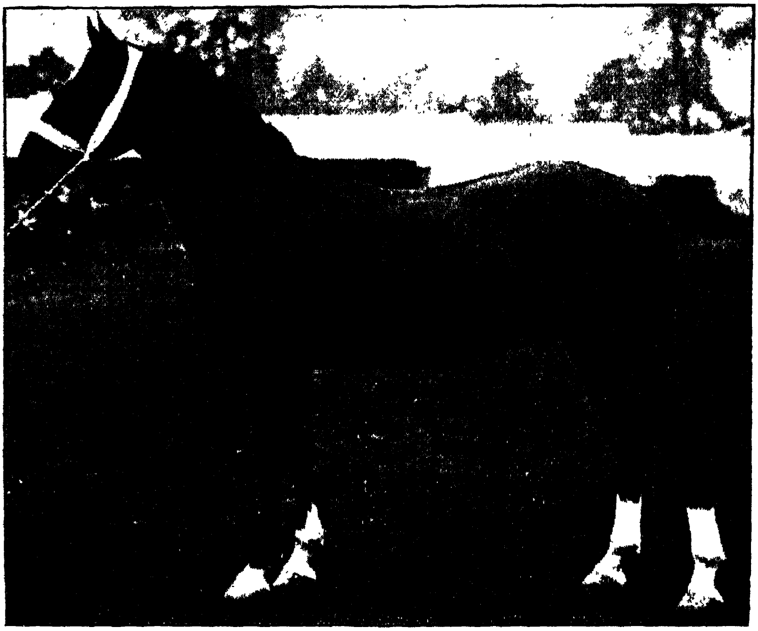

Fig. 75.—Roadster Gelding, "Sir Robert."

Winner of President's Medal for best Roadster, Perth, 1896. The property of Mr W. G. Moore, High Blantyre. Breeder unknown.

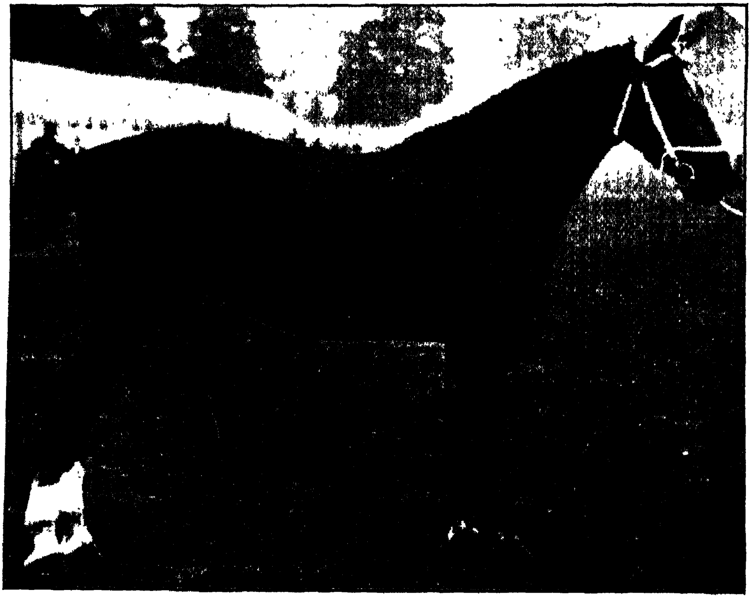

Fig. 76—Hackney Filly, "Sabina" 9496.

Winner of President's Medal for best Hackney, Perth, 1896. The property of Mr D. Mitchell, Stock," and competed successfully for the President's medal for the best animal of the breed. He was bred at Ballindalloch, got by "Prince Inca" 7844, and is a bull of exceptionally fine shapes and character. The Ballindalloch Challenge Cup for the best bull in the ordinary classes went to Sir George Macpherson Grant for "Prospero of Dalmore" 11,208, a well-shaped bull of desirable quality, bred by Mr Mackenzie of Dalmore, and got by "Edric" 9110, Mr Fletcher again providing a strong "reserve" in his promising first-prize yearling bull "Baron Ambrose" 12,265, of his own breeding. The Queen's famous cow "Gentian of Ballindalloch" 19,258 again appeared in good form, and could not be beaten amongst the Aberdeen-Angus females.

Galloway cattle were few in number, but of undeniably high merit. The President's medal for the best animal of the breed went to Mr John Cunningham, Durhamhill, for "Dora of Durhamhill" 13,550 (fig. 68), a three-year-old cow of admirable shapes and beautiful character and quality. She was bred by Mr James Cunningham, Tarbreoch, got by "Camp-Follower" 5042, and out of "Dora 4th of Tarbreoch" 11,996. The Countess of Carlisle's handsome three-year-old bull, "Sir Duncan" 5903, bred by the Duke of Buccleuch, was declared the best Galloway bull in the Show. The class of Galloway yearling heifers was exceptionally strong, both as to numbers and merit.

The classes of Ayrshire cattle were unevenly filled. There were strong classes of cows, yearling heifers, and yearling bulls, but the other classes were small. As a whole, the standard of merit was high. Mr Alex. Cross's fine cow "Judy" 8058 (fig. 69) not only headed her class, but also won the President's medal for the best animal of the breed. She was bred by himself, got by "Prince Charlie" 1931, and out of "Julia 2d" 6093. The best of the Ayrshire bulls was Sir Mark J. M'Taggart Stewart's well-known three-year-old bull "First Choice of Southwick" 3005.

As is usually the case at Perth, there was a large and very fine display of Highland cattle. The classes of yearling bulls and cows were unusually strong. Mr John Stewart of Ensay won the Champion medal with an ideal Highland bull, "Laoich" (fig. 70), bred by himself, got by "Ceatharnach Buidhe," and out of "Shellay III." 2351. A better representative than this of the Highland breed is rarely to be seen in any showyard. There was a very interesting contest for Mr T. V. Smith's prizes for groups of Highland cattle.

The experiment of opening classes for Dairy cows was not a success. There was not a single entry in the class for "Dairy cows, any pure breed or cross." In the special class for "Shorthorn cows, any age, in milk," one cow was entered, but she was

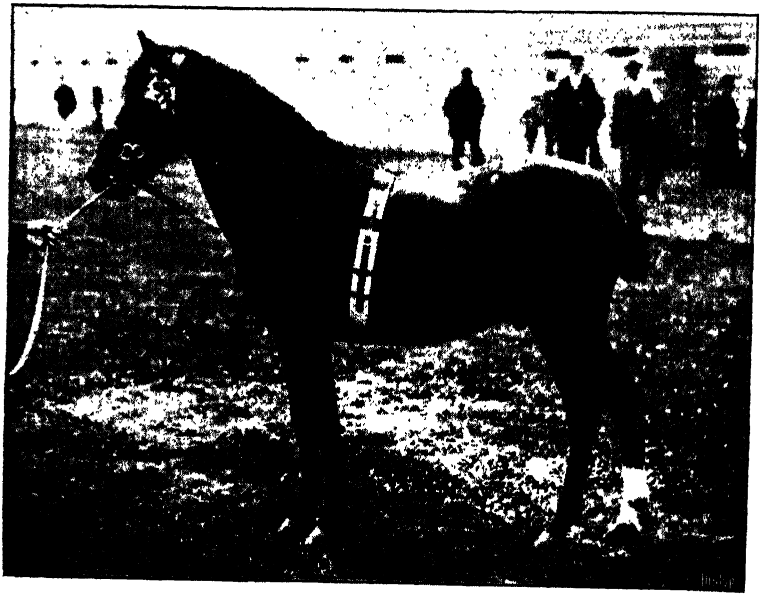

Fig. 77.—Pony Stallion, "Rocket."

Winner of President's Medal for best Pony, Perth, 1896. Bred by and the property of the Marquis of Londonderry, K.G., Seaham Hall, Seaham Harbour.

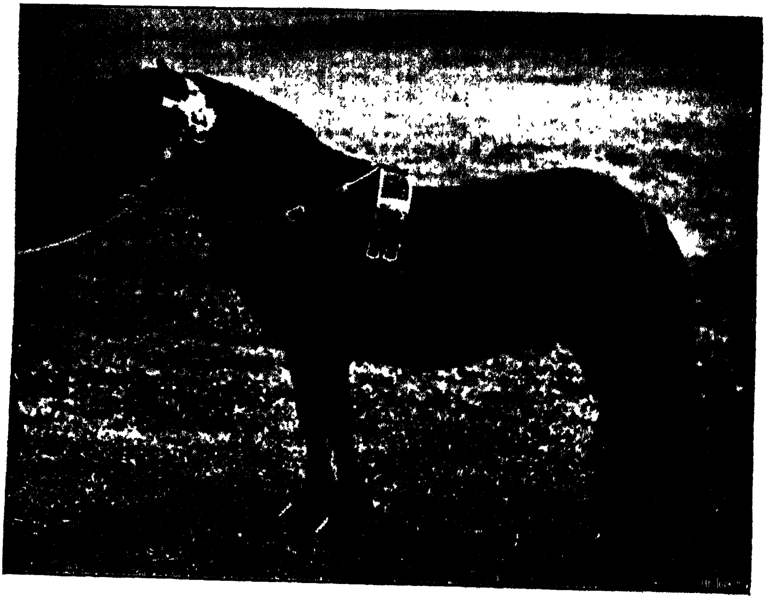

Fig. 78.—Shetland Pony Stallion, "Harold" 117.

Winner of President's Medal for best Shetland Pony, Perth, 1896. The property of Mr J. Douglas Fletcher of Rosehaugh, Avoch. Bred by the Marquis of Londonderry, K.G.

not exhibited. In the Dairy class for "Aberdeen-Angus cows, any age, in milk," there were four entries, Mr W. S. Ferguson taking the first prize with a fairly good representative of the breed.

Horses.

The show of Clydesdale horses was neither so large nor quite so strong in merit as it has sometimes been. Throughout the classes, however, there were many excellent representatives of the breed. The classes of stallions were noted rather for average merit than for the presence of animals of outstanding excellence. The President's Champion medal for the best Clydesdale stallion went to Messrs A. & W. Montgomery for their attractive well-built horse "King of the Roses" 9927 (fig. 71), bred by Mr Alex. Currie, Ardbeg, Rothesay, got by "Rosemount" 8953, and out of "Madge of Robgill" 8955 by "Lord Clyde" 1741. This valuable horse, of course, also won Mr James Lockhart's special prize of £10 for the best Clydesdale stallion in the ordinary classes. Draught geldings were few in number, but there was no lack of merit. Mr Clark got the President's medal for "The Boss" (fig. 72), a well-built four-year-old of unknown breeding. The display of Clydesdale females was stronger than that of stallions both in numbers and merit. Mr Gilmour of Montrave exhibited his famous mare "Montrave Maud" 11,786 (fig. 73) as "Extra Stock," and won with her not only the President's Champion medal but also the Cawdor Challenge Cup for the best Clydesdale mare or filly. This grand mare was bred by Mr Gilmour, got by "Prince of Wales" 673, and out of the celebrated "Moss Rose" 6203. Having won the Cawdor Cup twice before—on both occasions with "Moss Rose" —Mr Gilmour became final owner of the trophy by his victory at Perth. The class of two-year-old Clydesdale fillies was one of the strongest and best in the Show, and was closely run by that of yearling fillies of the same breed.

There was a small show of horses for the road and field, but amongst them a few animals of high merit. Mrs J. J. Moubray won the President's medal for the best Hunter with "Warwick" (fig. 74), a good-looking seven-year-old brown gelding of unknown breeding. Mr W. G. Moore's champion Roadster "Sir Robert" (fig. 75) is a very useful five-year-old bay gelding, also of unknown breeding.

It is observed with much satisfaction that there is an increasing interest in the breeding of Hackney horses in Scotland. There was a creditable display of Hackneys at Perth, and they unquestionably formed an attractive feature of the Show. Mr David Mitchell won the President's medal for the best Hackney in the Show with that beautiful three-year-old filly

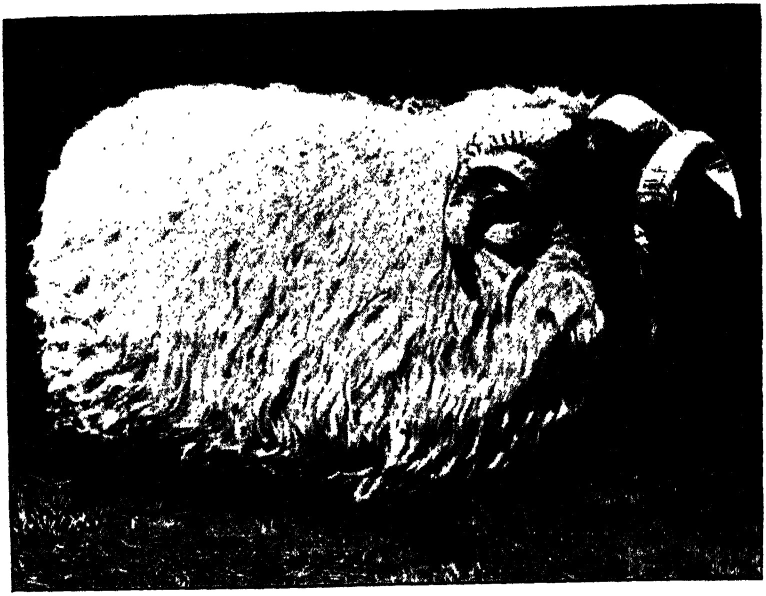

Fig. 79.—Blackfaced Ram.

Winner of President's Medal for best animal of the breed, Perth, 1896. Bred by and the property of Mr James Archibald, Overshiels, Stow.

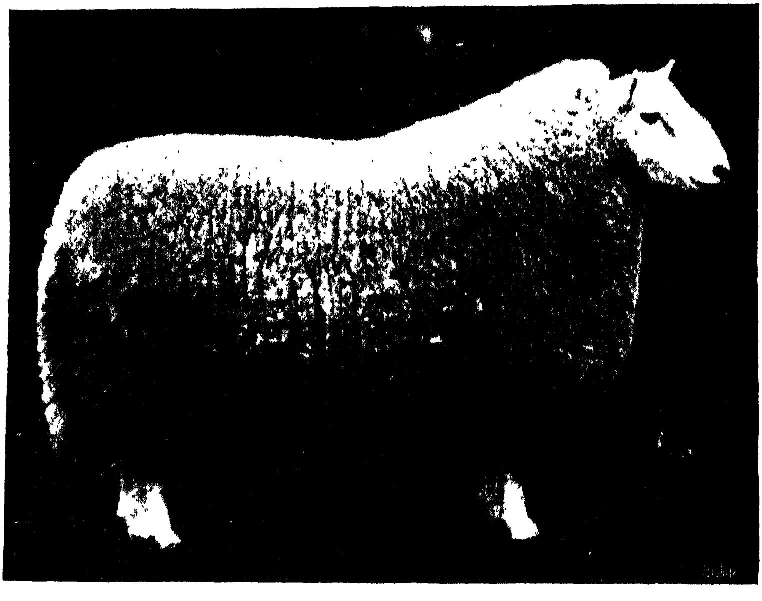

Fig. 80.—Cheviot Ram.

Winner of President's Medal for best animal of the breed, Perth, 1896. Bred by and the property of Mr John Elliot, Hindhope, Jedburgh.

"Sabina" 9496 (fig. 76), bred by Mr W. Martin, Stadlethorpe, Yorks, got by "North Star" 1317, and out of "Jean 2d" 2121. Having won the Hackney Society's Gold medal at an earlier Show, "Sabina" was not eligible to compete at Perth for that honour, which was awarded to Mr A. Morton's well-known six-year-old mare "Cicely" 5138.

There was a small but select display of Ponies. The Marquis of Londonderry won the President's medal with "Rocket" (fig. 77), a very promising two-year-old stallion, bred by himself, got by "Little Wonder 2d" 1610, and out of "Grace" 1058. Shetland Ponies made a remarkably interesting display—undoubtedly one of the most popular features of the Show. Mr Fletcher of Rosehaugh won the President's medal with the famous six-year-old stallion "Harold" 117 (fig. 78), bred by the Marquis of Londonderry, got by "Laird of Ross" 20, and out of "Fra" 185.

The entries in the classes for Turns-out were fewer than usual, but in the jumping contests there was a large competition and excellent performances.

Sheep, &c.

If not quite so large as at some former Shows, the display of sheep was certainly of a highly satisfactory character as regards merit. All the breeds were represented by sheep of the very highest merit, and in most cases the contests were exceptionally keen. It is worthy of remark that in all cases the sheep which won the President's Champion medals (figs. 79, 80, 81, and 82) were bred by their respective exhibitors. There was a small but very good show of Swine; a large and unusually good collection of Poultry; and a capital exhibition of Butter. The Earl of Rosebery's Champion Sow (fig. 83) is an animal of very high merit.

The Horse-shoeing classes were confined to the district of the Show, and on this account there were few competitors. As in former years, however, much interest was taken in the contests, and the work done was fairly satisfactory.

Motor-Cars.

Much interest was manifested in two "horseless carriages" exhibited in the Show. One of these carriages was a "Daimler, four-wheeled, four-seated, double cart-carriage, made by Panhard & Levassor, Paris," and kindly lent for exhibition by Mr T. R. Barnewell Elliot, yr. of Clifton Park, Kelso. This carriage had run over 900 miles during the eight months prior to the Show,

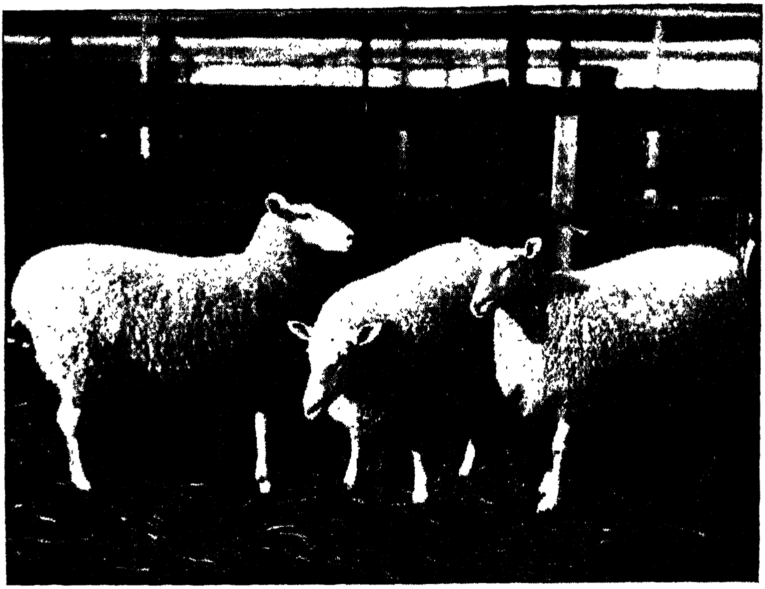

Fig. 81.—Border Leicester Ewes.

Winners of President's Medal for best pen of the breed, Perth, 1896. Bred by and the property of the Right Hon. A. J. Balfour, M.P., of Whittinghame, Prestonkirk.

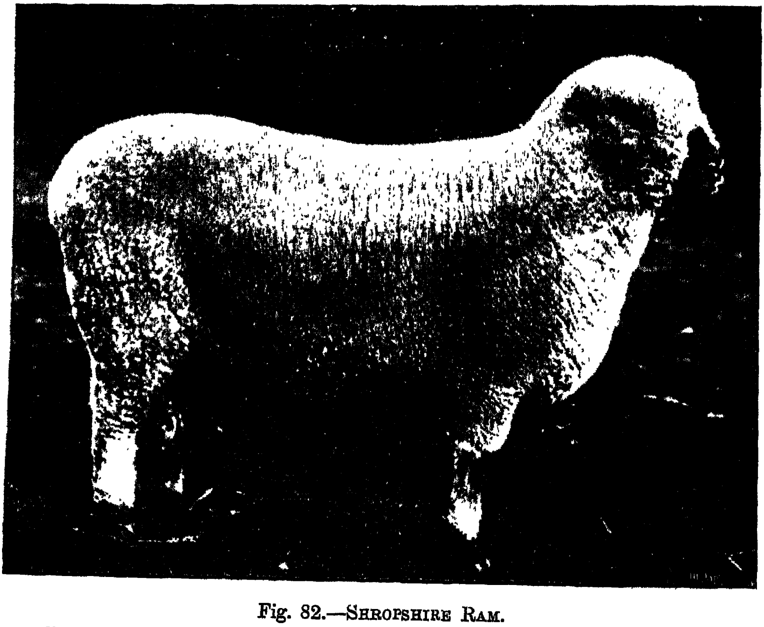

Fig. 82.—Shropshire Ram.

Winner of President's Medal for best animal of the breed, Perth, 1896. Bred by and the property of Mr R. P. Cooper, Shenstone Court, Lichfield.

and Mr Elliot ran it by road from Clifton Park to the showyard at Perth, resting one night by the way.

The other carriage was exhibited by The Daimler Motor Co., Limited, 40 Holborn Viaduct, London, E.C., and is described as follows in the entry for the Show: "Two-seated carriage, with extra seat for two children, *vis-à-vis* type, having four speeds —*i.e.*, 4, 8, 12, and 16 miles per hour. Fuel used—'petrol,' which is rectified petroleum, having a specific gravity of ·680 to ·700. Carriage carries fuel for 200 miles, and cooling water for 60 miles. Cost of fuel, about 1½d. per horse-power per hour. Nominal horse-power of engine—three." The Society's silver medal was awarded to the Daimler Motor-Car Co., Limited, for the exhibition of this carriage.

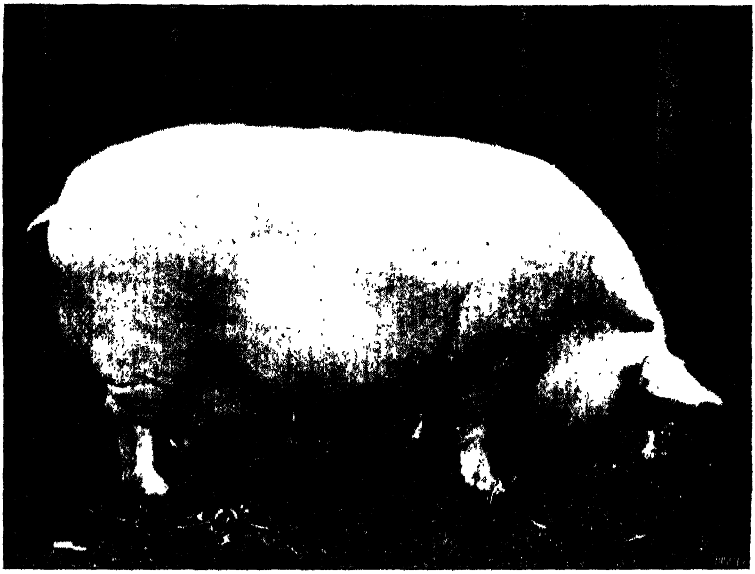

Fig. 83.—Large White Sow, "Joan of Arc III." 5872.

Winner of President's Medal for best Pig, Perth, 1896. The property of the Earl of Rosebery, K.G., Dalmeny Park, Edinburgh. Bred by Mr P. L. Mills, Ruddington Hall, Notts.

The carriages were run round the large ring immediately after the parades of horses on the forenoons and afternoons of the last three days of the Show, and much interest was excited by the novel display.

Trial of Corn-Dressing Machines.

A competitive trial of Corn-Dressing Machines took place in the showyard. The prizes offered were, First Prize £15, Second Prize £5. Machines were entered by the following firms—viz.:

Thomas Corbett, Perseverance Iron Works, Shrewsbury—Four Machines.
Alexander Dey, Church Street, Huntly—One Machine.
Richard Hornsby & Sons, Limited, Grantham—Two Machines.
John Richardson & Co., London Road, Carlisle—Two Machines.
T. & H. Rowan, Sandyford, Monkton, Ayrshire—One Machine.

Messrs Hornsby's machines being "screens" and not also "winnowers," did not take part in the trial. The other machines were tried successively with wheat, barley, oats, and a mixture of beans and tares, and the samples having been specially prepared for the purpose,—mixed with heads of grain, pieces of straw, and rubbish of various descriptions,—the trial was very severe and thorough. The judges were Messrs Jonathan Middleton, Clay of Allan, Fearn; George R. Glendinning, Hatton Mains, Kirknewton; and James D. Park, Edinburgh, Engineer to the Society. Both prizes were awarded to Mr Thomas Corbett, Perseverance Iron Works, Shrewsbury—the first prize of £15 for No. 2 in the catalogue—"Improved 'Eclipse' pattern Combined Blowing, Winnowing, Corn-dressing, and Screening Machine; made by Exhibitor—price £10, 10s."; and the second prize of £5 for No. 1 in the catalogue—"Patent 'Eclipse' Combined Blowing, Winnowing, Corn-dressing, and Screening Machine; made by Exhibitor—price £11, 17s. 6d."

Both these machines performed the duties allotted to them in a thoroughly satisfactory manner. They are in most respects similar in construction, and they work lightly, smoothly, and speedily, and they are low set for ease in feeding. The blast is conducted to riddles by angular boards on sides, and leaves the fan at a special angle, and is concentrated and delivered to the point in riddles with the best possible effect. By the use of adjustable wind or nostril boards the blast can be regulated to any required volume, and this facility proved of great advantage in dressing the various samples at the trials. After the grain has been winnowed and passed from the riddles it falls upon a screen the full width of the machine; this is made to move longitudinally, the front or delivery end of which can be easily raised or lowered, thereby giving to it the advantage of an adjustable screen, which added very materially to its efficiency in dealing with the varied difficult samples prepared for the trials.

The riddles in the first-prize machine were made to move in a curvilinear form, and the riddle-case was fitted with a series of grooves for receiving the riddles and trays, and was suspended at back to adjustable screws and chains, by which the riddles could be set to great nicety.

The arrangements as to the grooves and regulation of the riddles were the same in the second-prize machine as in the first, but in the second-prize machine a transverse motion was given to the riddles, whereby every part moved at the same speed, thereby keeping the sample much more open on the surface of the riddles, and giving the blast a better chance of dislodging the refuse. This machine was fitted with an iron-fluted feed-roller, with a section of the hopper resting thereon, and thus the portable board received from the roller as it revolved a rising and falling motion which acted as a self-feeder, and rendered the machine very efficient in this respect.

The difference in the movements of the riddles in the two machines is well shown in the accompanying illustrations—figs. 84, 85:—

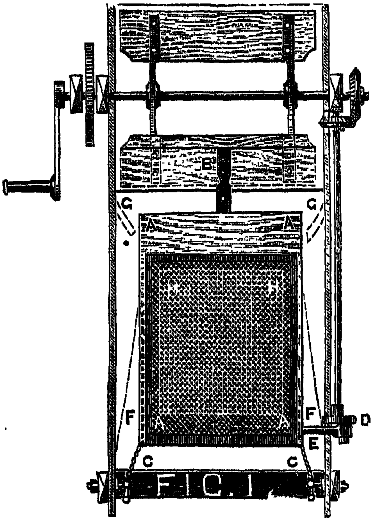

Fig. 84.—*Riddle with curvilinear motion.*

Explanation of Fig. 84.

AAAA Case or frame with riddles.
B Hook on which front of riddle-case hangs.
C Chains and regulating screws carrying back of riddles.
D Crank-wheel.
E Connecting-rod.
FF Points to which riddles move when at work.
GG Boards for conducting blast to riddles.
HH Points at which grain falls on riddles from hopper.

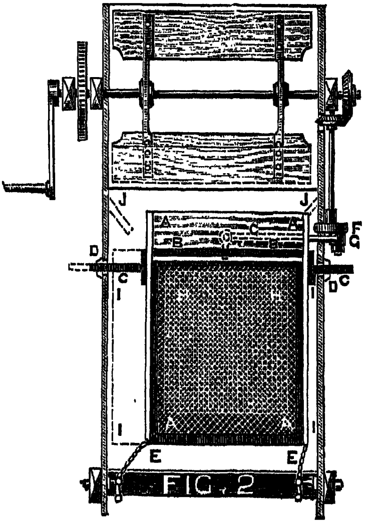

Fig. 85.—*Riddle with transverse motion.*

Explanation of Fig. 85.

AAAA Case or frame fitted with riddles.
BB Angle-iron bracket at front of bottom riddle.
CC Turned pins in bracket.
DD Brasses through which pins work.
EE Chains and regulating handles carrying back of riddles.
F Crank-wheel.
GG Connecting-rod.
HH Points at which grain falls from hopper on to riddles.
IIII Position to which riddles move when in work.
JJ Boards for conducting blast to riddles.

Exhibition of Binders at Work.

An exhibition of combined reapers and binders at work took place on Tuesday, 18th August, on a field kindly granted by

Mr Morton, North Muirton, Perth. The weather was delightfully fine, and there was a fairly large attendance of farmers. The field carried a moderately heavy crop of oats, portions of it being exceptionally heavy and badly laid and twisted. The test applied to the machines was thus by no means an easy one.

The following Directors and officials of the Society carried out the arrangements—viz., Messrs Jonathan Middleton, R. G. Glendinning, W. S. Ferguson, And. Hutcheson, G. Dun, R. Patterson, J. D. Park, Engineer, and James Macdonald, Secretary.

Ten machines were entered, and the following nine took part in the trial, viz.:—

J. Bisset & Sons, Blairgowrie—New Patent Open-Back steel-built Binder.

Blackstone & Co., Limited, Rutland Engineering Works, Stamford—the "Bonnie" Binder, driven throughout with steel chain. Made by The Johnstone Harvester Co., Batavia, New York, U.S.A.

James Gray & Co., Stirling—Adriance Rear-Discharge Self-Binder. Made by Adriance, Platt, & Co., New York.

Harrison, M'Gregor, & Co., Limited, Albion Iron Works, Leigh, Lancashire—the Albion, with small sheaf-carrier.

Richard Hornsby & Sons, Limited, Spittlegate Iron Works, Grantham—Sheaf-Binding Harvester.

Samuelson & Co., Limited, Britannia Works, Barnbury, Oxon.—(1) Low-Down Sheaf-Binding Harvester, without elevating aprons; and (2) Elevator (three Canvas) Sheaf-Binder, left-hand cut.

John Wallace & Sons, Graham Square, Glasgow—Massey-Harris Open-End Elevating Canvas Binder. Made by Massey-Harris Co., Limited, Brantford, Ontario, Canada.

Walter A. Wood, M. & R. M. Co., 36 Worship Street, London, E.C.—Open Rear Harvester and Binder.

It was again decided, in compliance with the representations submitted by the makers in 1894, that no official test be made of the draught of the various machines, but that the farmers present be allowed to judge for themselves of the character and quality of the work performed. Once more the general verdict was to the effect that on the whole the machines acquitted themselves in a thoroughly satisfactory manner.

PREMIUMS AWARDED BY THE SOCIETY IN 1896

I.—PERTH SHOW

21st, 22d, 23d, and 24th July 1896

ABBREVIATIONS.—V.H.C., *Very Highly Commended.* H.C., *Highly Commended.* C., *Commended.*

CATTLE

SHORTHORN.

PRESIDENT'S MEDAL for best Shorthorn.

George Harrison, The Hall, Gainford, Darlington, "Champion Cup" (65,240).
Reserve. J. Douglas Fletcher of Rosehaugh, Avoch, N.B., "Watchword" (68,063).

Best Bull of any age in Classes 1, 2, *and* 3—£20, given by the Shorthorn Society.

George Harrison, The Hall, Gainford, Darlington, "Champion Cup" (65,240).
Reserve. J. Douglas Fletcher of Rosehaugh, Avoch, N.B., "Watchword" (68,063).

Breeder of best Bull of any age in Classes 1, 2, *and* 3—Silver Medal.

J. Deane Willis, Bapton Manor, Codford.
Reserve. William Duthie, Collynie, Tarves.

CLASS 1. BULL, calved before 1st January 1894.—Premiums, £15, £10, and £5.

1. George Harrison, The Hall, Gainford, Darlington, "Champion Cup" (65,240).
2. John Gordon Smith, Minmore, Glenlivet, "Faugh-a-Ballagh" (64,013).
3. George Inglis, Newmore, Invergordon, "Just in Time" (62,672).
V.H.C. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh, "Dictator" (65,338).
H.C. George Bruce, Heatherwick, Inverurie, "Beau Ideal" (63,685).
C. C. M. Cameron, Balnakyle, Munlochy, "Reginald" (64,654).

CLASS 2. BULL, calved in 1894.—Premiums, £15, £10, and £5.

1. J. Douglas Fletcher of Rosehaugh, Avoch, N.B., "Watchword" (68,063).
2. James Carnegie, Aytonhill, Newburgh, "Mountain Robin."
3. D. C. Bruce, Byres Farm and Broadland, Fochabers, "Corporal" (66,868).
V.H.C. Arthur W. Law, Mains of Sanquhar, Forres, "Lord James" (67,361).
H.C. George Harrison, The Hall, Gainford, Darlington, "Wiltshire Count."
C. D. C. Bruce, Byres Farm and Broadland, Fochabers, "Churchill" (66,840).

CLASS 3. BULL, calved in 1895.—Premiums, £12, £8, and £4.

1. Arthur W. Law, Mains of Sanquhar, Forres, "Border Chief."
2. John Gilmour of Lundin and Montrave, Leven, Fife, "Oliver Cromwell."
3. David Cook of Carphin and Luthrie, Cupar-Fife, "Braw Fifer."
H.C. Lumsden & Mackenzie, Huntingtowerfield, Perth, "Rosebery."

C. Robert Carswell, Airth Mains, Airth, by Larbert, "King James."
C. Thomas Lambert, Elrington Hall, Hexham, "Royal Nonsuch."

CLASS 4. COW, of any age.—Premiums, £12, £8, and £4.

1. Arthur W. Law, Mains of Sanquhar, Forres, "Graceful 3d."
2. T. J. Graham Stirling of Strowan, Crieff, "Strowan Marchioness 3d."
3. William T. Malcolm, Dunmore Home Farm, by Larbert, "Raindrop."
V.H.C. James Watt, Knowefield, Carlisle, "Lothian Brilliant."
H.C. James Carnegie, Aytonhill, Newburgh, "Rock Cistus."
C. James Carnegie, Aytonhill, Newburgh, "Rock Cistus 3d."

CLASS 5. HEIFER, calved in 1894.—Premiums, £10, £5, and £3.

1. Arthur W. Law, Mains of Sanquhar, Forres, "Aggie Grace."
2. J. Douglas Fletcher of Rosehaugh, Avoch, N.B., "Kirklevington Doll."
3. John Gordon Smith, Minmore, Glenlivet, "Constance."
V.H.C. George Harrison, The Hall, Gainford, Darlington, "Rose Blossom."
H.C. A. Robertson, Haugh of Ballechin, Ballinluig, "Gem of Verona 3d."
C. John Gilmour of Lundin and Montrave, Leven, Fife, "Strawberry Gem."

CLASS 6. HEIFER, calved in 1895.—Premiums, £10, £5, and £3.

1. Charles Munro, Mains of Murthly, Aberfeldy, "Nessie."
2. Charles E. Law, Holl Farm, Boharm, Keith, "Lady Dorothy 24th."
3. A. Robertson, Haugh of Ballechin, Ballinluig, "Cherry Ripe."
V.H.C. Walter Elliot, Pitcox, Dunbar, "Julia."
H.C. John Gilmour of Lundin and Montrave, Leven, Fife, "Lily Wenlock."

ABERDEEN-ANGUS.

PRESIDENT'S MEDAL for best Aberdeen-Angus Animal.

George Smith Grant, Auchorachan, Glenlivet, Ballindalloch, Bull, "Equestrian" (9953).
Reserve. Her Majesty The Queen, Abergeldie Mains, Ballater, "Gentian of Ballindalloch" (19,258).

Best Bull of any age in Classes 7, 8, *and* 9—Ballindalloch Challenge Cup, value £50, given by the late Mr Macpherson Grant of Drumduan. The Cup shall be held by the winner for one year, and shall become the property of the Exhibitor who shall win it five times, not necessarily in succession.

Sir George Macpherson Grant, Bart., The Castle, Ballindalloch, "Prospero of Dalmore" (11,208).
Reserve. J. Douglas Fletcher of Rosehaugh, Avoch, "Baron Ambrose" (12,265).

Breeder of the Winner of the Ballindalloch Challenge Cup—Silver Medal.
Andrew Mackenzie, Dalmore, Alness.

Breeder of best Bull of any age in Classes 7, 8, *and* 9—Silver Medal.
Andrew Mackenzie, Dalmore, Alness.

CLASS 7. BULL, calved before 1st December 1893.—
Premiums, £15, £10, and £5.

1. Sir George Macpherson Grant, Bart., The Castle, Ballindalloch, "Prospero of Dalmore" (11,208).
2. Sir George Macpherson Grant, Bart., The Castle, Ballindalloch, "Eurotas of Ballindalloch" (9962).
3. The Earl of Strathmore, Glamis Castle, Glamis, "Boaz of Ballindalloch" (10,672).
V.H.C. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh, "Marquis of Moray" (9387).
H.C. Archibald Whyte, Inverquharity, Kirriemuir, "Marmion 9th" (11,052).

CLASS 8. BULL, calved on or after 1st December 1893.—
Premiums, £15, £10, and £5.

1. John Gordon Smith, Minmore, Glenlivet, "Bion" (11,454).
2. W. S. Ferguson, Kinochtry, Coupar-Angus, "Inspector of Kinochtry" (11,750).
3. William Whyte, Spott, Kirriemuir, "Junior Rover" (11,796).

V.H.C. George Willsher, Pitpointie, Dundee, "Erica Lad" (11,644).
H.C. Patrick Chalmers, Aldbar Castle, Brechin, "Prince Jo" (12,001).
C. George Bruce, Tochineal, Cullen, "Lictor of Blairmore" (11,832).

CLASS 9. BULL, calved on or after 1st December 1894.—Premiums, £12, £8, and £4.

1. J. Douglas Fletcher of Rosehaugh, Avoch, "Baron Ambrose" (12,265).
2. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh, "Edenhall" (12,442).
3. Her Majesty The Queen, Abergeldie Mains, Ballater, "Frederick of Abergeldie" (12,533).

V.H.C. William Whyte, Spott, Kirriemuir, "Ever Better" (12,488).
H.C. J. Douglas Fletcher, Rosehaugh, Avoch, "Gay Duke."
C. William Watt, Middlefield, Cupar, "Paradox of Glamis" (12,812).

Best Cow of any age in Class 10—Ballindalloch Challenge Cup, value £50, given by the late Mr Macpherson Grant of Drumduan. The Cup shall be held by the winner for one year, and shall become the property of the Exhibitor who shall win it five times, not necessarily in succession.

Her Majesty The Queen, Abergeldie Mains, Ballater, "Gentian of Ballindalloch" (19,258).
Reserve. Patrick Chalmers, Aldbar Castle, Brechin, "Annuity 4th" (18,926).

Breeder of the Winner of the Ballindalloch Challenge Cup—Silver Medal.

Sir George Macpherson Grant of Ballindalloch, Bart., Ballindalloch.

CLASS 10. COW, of any age.—Premiums, £12, £8, and £4.

1. Her Majesty the Queen, Abergeldie Mains, Ballater, "Gentian of Ballindalloch" (19,258).
2. Patrick Chalmers, Aldbar Castle, Brechin, "Annuity 4th" (18,926).
3. Sir George Macpherson Grant, Bart., The Castle, Ballindalloch, "Pride of Inveruglas" (16,504).

V.H.C. The Marquis of Huntly, Aboyne Castle, Aboyne, "St Barbara" (20,651).
H.C. Sir George Macpherson Grant, Bart., The Castle, Ballindalloch, "Gerenda" (19,259).
C. William Nimmo, Castle Eden, County Durham, "Rose of Benton" (19,854).
C. Sir Thomas D. Gibson-Carmichael, Bart., of Skirling, M.P., Castlecraig, Dolphinton, "Pride of Kirkurd" (20,522).

CLASS 11. HEIFER, calved on or after 1st December 1893.—Premiums, £10, £5, and £3.

1. Sir George Macpherson Grant, Bart., The Castle, Ballindalloch, "Georgia of Ballindalloch" (21,818).
2. Sir George Macpherson Grant, Bart., The Castle, Ballindalloch, "Elixir" (21,809).
3. Miss Morison Duncan, Naughton, Dundee, "Elena of Naughton 2d" (21,647).

V.H.C. George A. Ross, Rhynie, Fearn, "Gazelle of Rosehaugh" (21,700).
H.C. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh, "Pridella of Dalmeny 2d" (22,222).
C. J. Douglas Fletcher of Rosehaugh, Avoch, "Pride of the Black Isle" (21,715).
C. The Earl of Strathmore, Home Farm, Glamis Castle, Glamis, "Bianca of Glamis" (22,403).

CLASS 12. HEIFER, calved on or after 1st December 1894.—Premiums, £10, £5, and £3.

1. The Earl of Strathmore, Home Farm, Glamis Castle, Glamis, "Erica of Glamis" (23,568).
2. Sir George Macpherson Grant, Bart., The Castle, Ballindalloch, "Joyful" (22,999).
3. Sir George Macpherson Grant, Bart., The Castle, Ballindalloch, "Gardenia" (22,997).

V.H.C. Miss Morison Duncan, Naughton, Dundee, "Erica Evergreen" (22,845).
H.C. John Gordon Smith, Minmore, Glenlivet, "Matilda of Minmore" (23,497).
C. George Willsher, Pitpointie, Dundee, "Flowergirl 2d of Pitpointie" (23,683).
C. George Bruce, Tochineal, Cullen, "Joyce" (22,591).

EXTRA STOCK.

V.H.C. George Smith Grant, Auchorachan, Glenlivet, Ballindalloch, Bull, "Equestrian" (9953).

GALLOWAY.

PRESIDENT'S MEDAL for best Galloway.

John Cunningham, Durhamhill, Dalbeattie, "Dora of Durhamhill" (13,550).

Breeder of best Bull of any age in Classes 13, 14, *and* 15—Silver Medal.

The Duke of Buccleuch, K.T., Drumlanrig Castle, Thornhill.

CLASS 13. BULL, calved before 1st January 1894.—Premiums, £15, £10, and £5.

1. Countess of Carlisle, Naworth Castle, Brampton, Cumberland, "Sir Duncan" (5903).
2. John Cunningham, Durhamhill, Dalbeattie, "Scottish Knight of Durhamhill" (5924).
3. Christopher Graham, Skipmyre, Lochmaben, "Glenlivat" (6210).

V.H.C. H. G. Murray Stewart of Cally, Gatehouse, "The Pathfinder 2d" (5838).

CLASS 14. BULL, calved in 1894.—Premiums, £15, £10, and £5.

1. William Parkin-Moore, Whitehall, Mealsgate, Carlisle, "Nonpareil of Castlemilk" (6163).
2. The Duke of Buccleuch and Queensberry, K.T., Drumlanrig Castle, Thornhill, "Emperor of India" (615).

CLASS 15. BULL, calved in 1895.—Premiums, £12, £8, and £4.

1. Wilson Brothers, Cumstone, Lockerbie, "Clan Alpine 5th" (6464).
2. Robert Francis Dudgeon, Cargen, Dumfries, "Norseman of Castlemilk" (6395).
3. John Cunningham, Durhamhill, Dalbeattie, "Scottish Standard" (6488).

V.H.C. James Henderson, Raemoor, Lochmaben, "Ronald Macdonald" (6541).
H.C. Countess of Carlisle, Naworth Castle, Brampton, "Hadrian of Naworth" (6423).

CLASS 16. COW, of any age.—Premiums, £12, £8, and £4.

1. John Cunningham, Durhamhill, Dalbeattie, "Dora of Durhamhill" (13,550).
2. The Duke of Buccleuch and Queensberry, K.T., Drumlanrig Castle, Thornhill, "Atalanta 5th of Drumlanrig" (13,405).
3. Leonard Pilkington, Cavens, Dumfries, "Annie Laurie 3d of Cavens" (13,113).

V.H.C. The Duke of Buccleuch and Queensberry, K.T., Drumlanrig Castle, Thornhill, "Pride 7th of Drumlanrig" (13,407).
H.C. Christopher Graham, Harelawhill, Canonbie, "Harelawhill Lizzie" (13,031).
C. Sir Robert Jardine, Bart., of Castlemilk, Lockerbie, "Lady Vandeville of Castlemilk" (12,936).
C. William Parkin-Moore, Whitehall, Mealsgate, Carlisle, "Tidy Lady of Mertoun" (13,474).

CLASS 17. HEIFER, calved in 1894.—Premiums, £10, £5, and £3.

1. John Cunningham, Durhamhill, Dalbeattie, "Maggie Lauder of Durhamhill" (13,994).
2. William Parkin-Moore, Whitehall, Mealsgate, Carlisle, "Mac's Tidy" (14,026).
3. Leonard Pilkington, Cavens, Dumfries, "Primrose of Cavens" (13,897).

H.C. Christopher Graham, Harelawhill, Canonbie, "Moss Rose 2d of Harelawhill" (13,930).

CLASS 18. HEIFER, calved in 1895.—Premiums, £10, £5, and £3.

1. John Cunningham, Durhamhill, Dalbeattie, "Louisa of Durhamhill" (14,355).
2. Sir Robert Jardine, Bart., of Castlemilk, Lockerbie, "Stanley of Castlemilk" (14,285).
3. H. G. Murray Stewart of Cally, Gatehouse, "Maggie 6th of Cally" (14,409).

V.H.C. William Parkin-Moore, Whitehall, Mealsgate, Carlisle, "Lady Lauder of Whitehall" (14,308).
H.C. John Cunningham, Durhamhill, Dalbeattie, "Madonna of Durhamhill" (14,356).
C. Countess of Carlisle, Naworth Castle, Brampton, Cumberland, "Braw Lady of Naworth" (14,376).
C. William Parkin-Moore, Whitehall, Mealsgate, Carlisle, "Minette of Whitehall" (14,315).

HIGHLAND.

PRESIDENT'S MEDAL for best Highland Animal.

John Stewart, Ensay, Obbe, "Laoich."

Group of Highland Cattle, consisting of Bull, Cow with Calf at foot, and either a Three-year-old Heifer or a Two-year-old Heifer, drawn from Classes 19 *to* 24.—Prizes of £10 and £5, given by Mr T. V. Smith of Ardtornish.

1. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, with Bull, "Valentine 11th" (1160); Cow, "Cruinneag 2d" (2921); and three-year-old Heifer, "Sgiathach 12th."
2. The Duke of Atholl, K.T., Blair Castle, Blair Atholl, with Bull, "Callum Ban"; Cow, "Donnag Riabhach (2552); and three-year-old Heifer, "Te Ruadh 1st of Atholl."

Reserve. J. R. Campbell, Shinness, Lairg, Sutherland, with Bull, "Donull Dubh"; Cow, "Mairi Ruadh" (2909); and two-year-old Heifer, "Mairi Ruadh 2d."

Breeder of best Bull of any age in Classes 19, 20, *and* 21—Silver Medal.

John Stewart, Ensay, Obbe.

CLASS 19. BULL, calved before 1st January 1894.—Premiums, £15, £10, and £5.

1. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, "Valentine 11th" (1160).
2. W. Dalziel Mackenzie of Farr, Inverness, "Victor VII." (1067).
3. John Stewart, Bochastle, Callander, "Victor XI." (1163).

V.H.C. D. A. Stewart, Scorrybreck, Portree, "An Gille Math" (1081).
H.C. John Stewart, Ensay, Obbe, "An Gille Grinn."

CLASS 20. BULL, calved in 1894.—Premiums, £15, £10, and £5.

1. John Stewart, Ensay, Obbe, "Laoich."
2. Lord Malcolm of Poltalloch, Poltalloch, Lochgilphead, "Balach-a-Ghlinne-So."
3. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, "Victor 13th."

V.H.C. D. A. Stewart, Scorrybreck, Portree, "Dochfour."
H.C. Lord Middleton, Applecross, Strome Ferry, "Iain Buidhe na-Comerach."
C. J. S. Ainsworth of Ardanaiseig, Lochawe, "Cosmo" (1100).

CLASS 21. BULL, calved in 1895.—Premiums, £12, £8, and £4.

1. The Earl of Southesk, K.T., Kinnaird Castle, Brechin, "Duke of Leon."
2. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, "Victor 14th."
3. The Duke of Atholl, K.T., Blair Castle, Blair Atholl, "Calum Ban."

V.H.C. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, "Valentine 14th."
H.C. Lord Malcolm of Poltalloch, Poltalloch, Lochgilphead, "Ach-na-Sgeithe."
C. The Earl of Southesk, K.T., Kinnaird Castle, Brechin, "Fitzclare."

CLASS 22. COW, of any age.—Premiums, £12, £8, and £4.

1. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, "Cruinneag 2d" (2921).
2. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, "Phroiseag 4th of Ardtornish" (2275).
3. J. Campbell of Kilberry, Argyllshire, "Baravalla Riabhach" (1401).

V.H.C. The Duke of Atholl, K.T., Blair Castle, Blair Atholl, "Donnag Riabhach" (2552).
H.C. Lord Malcolm of Poltalloch, Poltalloch, Lochgilphead, "Ealasaid Og" (2857).
C. J. R. Campbell, Shinness, Lairg, Sutherland, "Mairi Ruadh" (2909).

CLASS 23. HEIFER, calved in 1893.—Premiums, £10, £5, and £3.

1. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, "Sgiathach 12th."
2. The Duke of Atholl, K.T., Blair Castle, Blair Atholl, "Te Ruadh 1st of Atholl."

3. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, "Sgiathach 11th."
V.H.C. John Stewart, Bochastle, Callander, "Anna Ruadh" (3416).
H.C. Sir Donald Currie, K.C.M.G., M.P., Garth, Aberfeldy, "Princess of Garth."
C. John Stewart, Bochastle, Callander, "Phroiseag Riabhach II."

CLASS 24. HEIFER, calved in 1894.—Premiums, £10, £5, and £3.

1. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, "Mary Buidhe 4th."
2. J. R. Campbell, Shinness, Lairg, Sutherland, "Mairi Ruadh 2d."
3. Earl of Southesk, K.T., Kinnaird Castle, Brechin, "Castanea" (3380).
V.H.C. Earl of Southesk, K.T., Kinnaird Castle, Brechin, "Lady Maisie" (3393).
H.C. Thomas Valentine Smith, Ardtornish, Morvern, Argyllshire, "Cruinneag 4th."
C. James Carnegie of Stronvar, Lochearnhead, R.S.O., "Morag."

AYRSHIRE.

PRESIDENT'S MEDAL for best Ayrshire.

Alexander Cross, Knockdon, Maybole, "Judy" (8058).

Breeder of best Bull of any age in Classes 25, 26, *and* 27—Silver Medal.

Sir Mark J. M'Taggart Stewart, Bart, M.P., Southwick, Dumfries.

CLASS 25. BULL, calved before 1st January 1894.—Premiums, £15, £10, and £5.

1. Sir Mark J. M'Taggart Stewart, Bart., M.P., Southwick, Dumfries, "First Choice of Southwick" (3005).
2. James M'Farlane, Oxhill, Buchlyvie, "Cockie's Pride" (3356).

CLASS 26. BULL, calved in 1894.—Premiums, £12, £8, and £4.

1. Robert M'Kinlay, Hillhouse, Sandilands, Lanark, "Douglas Chief" (3400).
2. Robert Osborne, Wynholm, Lockerbie, "Sultan" (3071).
3. Fairfield Farming Co. (Limited), Fairfield, Kippen, Stirlingshire, "Ambler."

CLASS 27. BULL, calved in 1895.—Premiums, £8, £5, and £3.

1. Robert Montgomerie, Lessnessock, Ochiltree, "Sensation."
2. Hugh Drummond, Craighead, Mauchline, "Duke of Argyle."
3. Andrew Mitchell, Barcheskie, Kirkcudbright, "Mischief Maker."
V.H.C. R. Osborne, Wynholm, Lockerbie, "Prime Mover."
H.C. G. J. Fergusson-Buchanan, Auchentorlie, Bowling, "Donald" (3357).

CLASS 28. COW (in Milk), any age.—Premiums, £10, £7, and £3.

1. Alexander Cross, Knockdon, Maybole, "Judy" (8058).
2. R. & J. M'Alister, Mid Ascog, Rothesay, "Annie Lawrie."
3. Alexander Cross, Knockdon, Maybole, "Retson."
V.H.C. Colonel Patrick Stirling of Kippendavie, Kippenross Home Farm, Dunblane, "Sweet Maria."
H.C. Fairfield Farming Company (Limited), Fairfield, Kippen, Stirlingshire, "Fairfield Snowflake."

CLASS 29. COW, of any age, in Calf, or Heifer calved in 1893 in Calf and due to calve within one month of the first day of the Show.—Premiums, £10, £7, and £3.

1. Leonard Pilkington, Cavens, Dumfries, "Yellow Bess 4th of Castlehill" (8813).
2. Alexander Cross, Knockdon, Maybole, "6th Derby Polly" (8064).
3. Alexander Cross, Knockdon, Maybole, "Derby Pinky 3d" (8618).
V.H.C. R. & J. M'Alister, Mid Ascog, Rothesay, "Maggie 2d of Mid Ascog."
H.C. Sir Mark J. M'Taggart Stewart, Bart., M.P., Southwick, Dumfries, "Bess of Promise of Southwick" (9362).

CLASS 30. HEIFER, calved in 1894.—Premiums, £10, £5, and £3.

1. Hugh Drummond, Craighead, Mauchline, "May Queen 2d" (9885).
2. Sir Mark J. M'Taggart Stewart, Bart., M.P., Southwick, Dumfries, "Lady Grace of Southwick."
3. Fairfield Farming Company (Limited), Fairfield, Kippen, Stirling, "Fairfield Dainty Lass."
V.H.C. G. J. Fergusson-Buchanan, Auchentorlie, Bowling, "Nancy."

CLASS 31. HEIFER, calved in 1895.—Premiums, £8, £5, and £3.

1. Robert M'Kinlay, Hillhouse, Sandilands, Lanark, "Princess May."
2. Robert Montgomerie, Lessnessock, Ochiltree, "Snowdrop 2d."
3. Sir Mark J. M'Taggart Stewart, Bart., M.P., Southwick, Dumfries, "Stately 4th of Southwick."

V.H.C. Andrew Mitchell, Barcheskie, Kirkcudbright, "Queen Bess."
H.C. Hugh Drummond, Craighead, Mauchline, "Lady Belle."
C. Robert Montgomerie, Lessnessock, Ochiltree, "Queen."

DAIRY COWS.

CLASS 32. DAIRY COW, any pure breed or cross.—Prizes of £5, £3, and £2. Given by Mr D. Stewart, Muirhall, Perth, and others.—*No Entry.*

CLASS 33. SHORTHORN COW, any age, in Milk, entered in, or eligible for, Coates Herd-Book.—Prizes of £10 (given from the Shorthorn Dairy Prize Fund) and £5 (given by the Society).—*No Entry.*

CLASS 34. ABERDEEN-ANGUS COW, any age, in Milk, entered in, or eligible for, the Polled Herd-Book.—Prizes of £10 (given by Mr W. S. Ferguson, Pictstonhill) and £5 (given by the Society).

1. W. S. Ferguson, Kinochtry, Coupar-Angus, "Flora of Conmieston" (21,096).
2. George Willsher, Pitpointie, Dundee, "Flowergirl of Pitpointie" (20,032).

V.H.C. Thomas Smith, Powrie, Dundee, "Witch of Endor 25th" (23,348).

EXTRA CATTLE.

V.H.C. John Gilmour of Lundin and Montrave, Leven, Fife, Cross Ox.
H.C. John Gilmour of Lundin and Montrave, Leven, Fife, Cross Heifer.
C. Captain Baird Hay, Belton, Dunbar, Jersey Bull, "Apollo."

HORSES

FOR AGRICULTURAL PURPOSES.

DRAUGHT STALLIONS.

PRESIDENT'S MEDAL for best Clydesdale Stallion.

A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "King of the Roses" (9927).

Best Stallion in Classes 35 *to* 38—Champion Prize of £10, given by Mr James Lockhart, Mains of Airies.

A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "King of the Roses" (9927).

Breeder of best Male Animal of any age in Classes 35 *to* 38—Silver Medal.

Alexander Currie, Ardbeg, Rothesay.

CLASS 35. STALLION, foaled before 1st January 1893.—Premiums, £15, £12, £8, and £4.

1. A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "King of the Roses" (9927).
2. W. S. Park, Hatton, Bishopton, "Prince of Erskine" (9647).
3. Leonard Pilkington, Cavens, Dumfries, "Prince Sturdy" (10,112*).
4. J. Douglas Fletcher of Rosehaugh, Avoch, "Maceachran" (9792).

V.H.C. A. M'Robbie, Sunnyside, Aberdeen, "Rosario" (9996).
H.C. Matthew Marshall, Bridgebank, Stranraer, "Prince of Garthland" (9828).
C. D. Riddell, Blackhall, Paisley, "Lord Wolseley."

Class 36. ENTIRE COLT, foaled in 1893.—Premiums, £15, £12, £8, and £4.

1. A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Prince Shapely" (10,111*).
2. Thomas Kennedy, Glenhead, Uplawmoor, "Prince Alick" (10,100).
3. William Curr, Merrylee, Cathcart, "Knight of Cowal" (10,074).
4. W. S. Park, Hatton, Bishopton, "Royal Alexander" (9997).

V.H.C. A. M'Robbie, Sunnyside, Aberdeen, "Champion" (9873).
H.C. David Riddell, Blackhall, Paisley, "Nonpareil."
C. Scott Wyllie, Dalcrue Farm, Almondbank, "Halkshill" (9920).

Class 37. ENTIRE COLT, foaled in 1894.—Premiums, £15, £10, £6, and £3.

1. John Marr, Cairnbrogie, Old Meldrum, "King's Knight" (10,071).
2. A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Primate" (10,009).
3. W. H. Lumsden of Balmedie, Aberdeen, "Balmedie Prince Charming" (10,027).
4. James Kilpatrick, Craigie Mains, Kilmarnock, "Cawdor Cup" (10,045).

V.H.C. A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "Montrave Sentinel" (10,094).
H.C. James A. Wallace, Claycrop, Kirkinner, "Duke of Abercorn" (10,058).
C. Alexander Scott, Berryyards Farm, Greenock, "Sir Visto."

Class 38. ENTIRE COLT, foaled in 1895.—Premiums, £12, £7, £4, and £2.

1. A. & W. Montgomery, Netherhall and Banks, Kirkcudbright, "M'Raith."
2. George Alston, Loudoun Hill, Darvel, "Gartly Prince."
3. A. & W. Montgomery, Netherhall and Banks, Kirkcudbright.
4. W. S. Park, Hatton, Bishopton, "Prince of Knockdon."

V.H.C. Andrew Dewar, Arnprior, Port of Menteith.
H.C. Lord Polwarth, Mertoun House, St Boswells, "Border Baron."

DRAUGHT GELDINGS.

PRESIDENT'S MEDAL for best Draught Gelding.

William Clark, Netherlee, Cathcart, "The Boss."

Class 39. DRAUGHT GELDING, foaled before 1st January 1893.—Premiums, £8, £4, and £2.

1. William Clark, Netherlee, Cathcart, "The Boss."
2. Alex. Guild, Greenhead, Pencaitland, "Victory."
3. Colonel Patrick Stirling of Kippendavie, Kippenross Home Farm, Dunblane, "Captain."

Class 40. DRAUGHT GELDING, foaled in 1893.—Premiums, £5, £3, and £2.

1. William Clark, Netherlee, Cathcart, "Defender."
2. J. Douglas Fletcher of Rosehaugh, Avoch, "Prince Arthur."
3. David Wilkie, Newton, Glencarse, "Major."

Class 41. DRAUGHT GELDING, foaled in 1894.—Premiums, £5, £3, and £2.

1. William Clark, Netherlee, Cathcart, "Quality."

DRAUGHT MARES AND FILLIES.

PRESIDENT'S MEDAL for best Clydesdale Mare or Filly.

John Gilmour of Montrave, Leven, "Montrave Maud" (11,786).

Best Mare or Filly registered in the Clydesdale Stud-Book—Cawdor Challenge Cup, value 50 guineas, given by the Clydesdale Horse Society. The Cup must be won three times by an Exhibitor (but not necessarily in consecutive years or with the same animal) before it becomes his absolute property.

John Gilmour of Montrave, Leven, "Montrave Maud" (11,786).

CLASS 42. MARE, of any age, with Foal at foot.—Premiums, £15, £10, £5, and £3.

1. Thomas Smith, Blacon Point, Chester, "Belle of Fashion."
2. The Marquis of Londonderry, K.G., Seaham Hall, Seaham Harbour, "High Tide."
3. James Crawford, Floshend, Gretna, "Queen of Gretna."
4. Colonel Patrick Stirling of Kippendavie, Kippenross Home Farm, Dunblane, "Lady Grace Rowan" (12,337).

V.H.C. John Gilmour of Montrave, Leven, "La Belle" (8325).

CLASS 43. YELD MARE, foaled before 1st January 1893.—Premiums, £10, £6, £3, and £2.

1. Sir Robert D. Moncreiffe, Bart., Gateside Home Farm, Bridge of Earn, "May Fly."
2. R. Sinclair Scott, Flatt Farm, Largs, Ayrshire, "Irene" (12,641).
3. David Mitchell, Millfield, Polmont, "Princess Alexandra."
4. Alexander Guild, Greenhead, Pencaitland, "Dawn."

CLASS 44. FILLY, foaled in 1893.—Premiums, £10, £6, £3, and £2.

1. Matthew Marshall, Bridgebank, Stranraer, "Lady Lothian."
2. William Black, Stanrigg, Airdrie, "Lightsome Lass."
3. Thomas Smith, Blacon Point, Chester, "Jean Macgregor."
4. W. S. Park, Hatton, Bishopton, "Bessie Lee."

V.H.C. John Gilmour of Montrave, Leven, "Montrave Rebecca."
H.C. Alexander Whitelaw, Gartshore, Kirkintilloch, "Princess May."
C. Leonard Pilkington, Cavens, Dumfries, "Hawthorn."

CLASS 45. FILLY, foaled in 1894.—Premiums, £10, £6, £3, and £2.

1. W. H. Lumsden of Balmedie, Aberdeen, "Balmedie Queen Mab."
2. The Marquis of Londonderry, K.G., Seaham Hall, Seaham Harbour, "Kite."
3. G. & J. Cocker, Hill of Petty, Fyvie, "Lady Alice."
4. R. & J. Findlay, Springhill, Baillieston, "Baroness."

V.H.C. Sir Robert D. Moncreiffe, Bart., Gateside Home Farm, Bridge of Earn, "Moncreiffe Gwendoline."
H.C. D. Riddell, Blackhall, Paisley.
C. The Duke of Buccleuch and Queensberry, K.T., Drumlanrig Castle, Thornhill, "Marchioness 2d of Drumlanrig."
C. William Reid, Burnside, Braco, Perthshire, "Nelly Signet."

CLASS 46. FILLY, foaled in 1895.—Premiums, £10, £6, £3, and £2.

1. William Clark, Netherlea, Cathcart, "Lady Raffan."
2. James Gray, Birkenwood, Gargunnock, "Princess Gwendoline."
3. Lord Polwarth, Mertoun House, St Boswells, "Border Jasmine."
4. George Stewart, Haulkerton Mains, Laurencekirk, "Napolitaine."

V.H.C. J. Douglas Fletcher of Rosehaugh, Avoch, "Marie Macgregor."
H.C. Colonel Patrick Stirling of Kippendavie, Kippenross Home Farm, Dunblane, "Princess Maud."
C. Herbert Webster, Morton House, Fence Houses, "Scottish Beauty."
C. John Gilmour of Montrave, Leven, "Montrave Rosamond."

ROAD OR FIELD.

CLASS 47. COLT, GELDING, or FILLY, foaled in 1895, the produce of Thoroughbred Stallions, out of Mares of any breed.—Five Prizes—£10, £7, £5, £2, and £1, given by Mr Gilmour of Montrave.

1. Thompson & Sons, Kirkhouse, Carlisle, Filly, "Flavia."
2. Thomas C. Jackson, Tullylumb, Perth, Gelding, "Cabin Boy."
3. Robert Brown, Craighead, Bothwell, Filly.
4. W. R. O'D. Young M'Dowel, Craig Lodge, Glenluce, Gelding, "Harbinger."
5. Thomas C. Jackson, Tullylumb, Perth, Filly, "Blink Bonny."

PRESIDENT'S MEDAL for best Hunter.

Mrs John J. Moubray of Naemoor, Rumbling Bridge, Gelding, "Warwick."

Best Hunter Filly in Classes 48 *and* 49—Gold Medal, value £10, 10s. Given by Hunters' Improvement Society.

Captain James Scott Black, Balgowan, Perth, Mare, "Keilah" (1065).

CLASS 48. MARE or GELDING, for field, foaled in 1893, *in hand.*—Premiums, £6, £4, and £2.

1. Thompson & Sons, Kirkhouse, Carlisle, Gelding, "Premier."
2. J. P. Laurie, Shieldhill, Lochmaben, Mare, "Rose."
3. James Kilpatrick, Craigie Mains, Kilmarnock, Mare, "Lizzie."

V.H.C. Captain Clayhills Henderson, R.N., Invergowrie, Dundee, Mare, "Princess Charlotte."

CLASS 49. MARE or GELDING, for field, foaled in 1894, *in hand.*—Premiums, £6, £4, and £2.

1. Thompson & Sons, Kirkhouse, Carlisle, Gelding, "Kaiser."
2. Captain James Scott Black, Balgowan, Perth, Mare, "Keilah" (1065).
3. Robert Brown, Craighead, Bothwell, Mare.

CLASS 50. HUNTER, Mare or Gelding, foaled before 1st January 1893, able to carry over 14 stone, *in saddle.*—Premiums, £10, £6, and £3.—*No Entry.*

CLASS 51. HUNTER, Mare or Gelding, foaled before 1st January 1893, able to carry from 12 to 14 stone, *in saddle.*—Premiums, £8, £4, and £2.

1. Mrs John J. Moubray of Naemoor, Rumbling Bridge, Gelding, "Warwick."
2. W. R. O'D. Young M'Dowel, Craig Lodge, Glenluce, Gelding, "Dennis."

PRESIDENT'S MEDAL for best Roadster.

W. Moore, Greenhall, High Blantyre, Gelding, "Sir Robert."

CLASS 52. ROADSTER, Mare or Gelding, foaled before 1st January 1893, 15 hands and upwards, *in saddle.*—Premiums, £8, £4, and £2.

1. W. Moore, Greenhall, High Blantyre, Mare, "Hawthorn."
2. A. S. M'Arthur, V.S., 23 Princes Street, Perth, Mare, "Demonch."
3. James Walker, Limefield, West Calder, Mare, "Flora" (2758).

V.H.C. George A. Maclean, Westfield, Elgin, Gelding, "Victor."

CLASS 53. ROADSTER, Mare or Gelding, foaled before 1st January 1893, 14.2 and under 15 hands, *in saddle.*—Premiums, £8, £4, and £2.

1. W. Moore, Greenhall, High Blantyre, Gelding, "Sir Robert."
2. Sir Robert Moncreiffe, Bart., Moncreiffe House, Bridge of Earn, Gelding, "Timothy."
3. Alexander Gemmell, Carlton Terrace, Ayr, Gelding, "Lord Babbally."

V.H.C. Edward Cliff, Ravenshall, Gatehouse-on-Fleet, Gelding, "Velocity" (5051).

EXTRA STOCK.

V.H.C. George Inglis, Newmore, Invergordon, Stallion, "Lionel."

HACKNEYS.

(ALL TO BE SHOWN IN HAND.)

PRESIDENT'S MEDAL for best Hackney.

David Mitchell, Millfield, Polmont, "Sabina" (9496).

Best Mare or Filly in Hackney or Pony Classes—Gold Medal, value £10, given by the Hackney Horse Society. A Mare 6 years old or more must have had a living foal. Winners of the Hackney Society's Medals in 1896, except at the London and Royal English Shows, excluded. The winner must be entered or accepted for entry in Hackney Stud-Book, and certified free from hereditary disease. The Gold Medal being of the intrinsic value of £10, that amount will be paid by the Hackney Horse Society at any time if the Medal be returned in good condition.

Alexander Morton, Gowanbank, Darvel, "Cicely" (5138).

Reserves { Charles E. Galbraith, Ayton Castle, Ayton, "Lena" (5684).
James M'Meeken, Carnbooth, Busby, "Daisy Danegelt" (8804).

CLASS 54. BROOD MARE, 15 hands and upwards, with Foal at foot, or to foal this season to a registered sire. Registered in the Hackney Stud-Book.—Premiums, £8, £4, and £2.

1. Charles E. Galbraith, Ayton Castle, Ayton, "Lena" (5684).
2. James Walker, Limefield, West Calder, "Miss Agnes" (248).
3. David Mitchell, Millfield, Polmont, "Filbert" (2060).

CLASS 55. BROOD MARE, under 15 hands, with Foal at foot, or to foal this season to a registered sire. Registered in the Hackney Stud-Book.—Premiums, £8, £4, and £2.

1. Alexander Morton, Gowanbank, Darvel, "Cicely" (5138).
2. James Walker, Limefield, West Calder, "Jessie" (3956).
3. David Mitchell, Millfield, Polmont, "Enchantress" (8851).

CLASS 56. FILLY, foaled in 1893, got by registered hackney sire.—Premiums, £6, £4, and £2.

1. David Mitchell, Millfield, Polmont, "Sabina" (9496).
2. Charles E. Galbraith, Ayton Castle, Ayton, "Lady Kate" (8092).
3. James Walker, Limefield, West Calder, "Ena" (7826).

CLASS 57. FILLY, foaled in 1894, got by registered hackney sire.—Premiums, £6, £4, and £2.

1. James M'Meeken, Carnbooth, Busby, "Daisy Danegelt" (8804).
2. Charles E. Galbraith, Ayton Castle, Ayton, "Lady Seaton" (9171).
3. J. B. Stephenson, Broombarns, Forgandenny, "Heliotrope."

CLASS 58. FILLY, foaled in 1895, got by registered hackney sire.—Premiums, £6, £4, and £2.

1. Charles E. Galbraith, Ayton Castle, Ayton, "Lady Ida."
2. Gordon R. Shiach, Bardonside, Birnie, Elgin, "Vivandiere."
3. J. Harriott Bell, Rossie, Forgandenny.

CLASS 59. STALLION, any Age, over 14.2 hands, registered in the Hackney Stud-Book.—Premiums, £10, £5, and £2.

1. Alexander Morton, Gowanbank, Darvel, "The Conqueror" (5559).
2. Sir Robert D. Moncreiffe, Bart., Moncreiffe House, Bridge of Earn, "Moncreiffe Matchless" (5327).
3. J. Harriott Bell, Rossie, Forgandenny, "Vandyke" (4560).

EXTRA STOCK.

C. Gavin Hadden, Dalmuinzie, Murtle, Aberdeen, "Challenger" (3013).

CLASS 60. ENTIRE COLT, foaled in 1894, registered in Hackney Stud-Book.—Premiums, £6, £4, and £2.

1. Sir Robert D. Moncreiffe, Bart., Moncreiffe House, Bridge of Earn, "Moncreiffe Douglas" (5725).
2. Alexander Morton, Gowanbank, Darvel, "Gilfoot" (5636).
3. Henry Liddell-Grainger, Middleton Hall, Belford, Northumberland, "Gold Miner" (5638).

CLASS 61. ENTIRE COLT, foaled in 1895, eligible for entry in Hackney Stud-Book.—Premiums, £6, £4, and £2.

Alexander Morton, Gowanbank, Darvel.

PONIES.

PRESIDENT'S MEDAL for best Pony.

The Marquis of Londonderry, K.G., Seaham Hall, Seaham Harbour, "Rocket."

CLASS 62. STALLION, over 12, not exceeding 14.2 hands.—Premiums, £4, £2, and £1.

1. James M'Meeken, Carnbooth, Busby, "Sir Bertie" (5401).
2. Alexander Morton, Gowanbank, Darvel, "Goldlink."
3. Robert Baird, Burnbank, Lenzie, "Sir Douglas."

H.C. David Durkie, Stobswell, Dundee, "Mars Junior."

CLASS 63. MARE or GELDING, between 13 and 14½ hands.—Premiums, £4, £2, and £1.

1. William W. Galbraith, Croftfoot, Gartcosh, Mare, "Hazel."
2. Alexander F. Durkie, Mill of Mains, Dundee, Mare, "Lily."
3. Martin L. Hadden, Binghill, Murtle, by Aberdeen, Mare, "Snorer 4th" (6163).

H.C. Neil M'Lean, Breda, Alford, Aberdeenshire, Mare, "Maggie."

CLASS 64. MARE or GELDING, between 12 and 13 hands.—Premiums, £4, £2, and £1.

1. Miss Marianne Anderson, Barskimming, Mauchline, Ayrshire, Mare, "Preference."
2. Alexander F. Durkie, Mill of Mains, Dundee, Mare, "Modellus."
3. David Durkie, Stobswell, Dundee, Mare, "Ada."

V.H.C. William Watt, Middlefield, Cupar-Fife, Mare, "Lady George."
H.C. J. Harriott Bell, Rossie, Forgandenny, Gelding, "Victor."

CLASS 65. STALLION, under 12 hands.—Premiums, £4, £2, and £1.

1. The Marquis of Londonderry, K.G., Seaham Hall, Seaham Harbour, "Rocket."

CLASS 66. MARE or GELDING, under 12 hands.—Premiums, £4, £2, and £1.

1. Miss Marianne Anderson, Barskimming, Mauchline, Gelding, "Watkin."
2. David Mitchell, Millfield, Polmont, Mare, "Marstivity."
3. Robert Kirkwood, Camelon, Falkirk, Mare, "Molly."

V.H.C. Col. E. R. Steuart Richardson, Ballathie, Stanley, Mare, "Norah."
H.C. Robert Kirkwood, Camelon, Falkirk, Mare, "Maggie."

EXTRA STOCK.

V.H.C. Captain A. H. O. Dennistoun, Kilgraston, Bridge of Earn, Egyptian Donkey Stallion, "Fayoum."

SHETLAND PONIES.

PRESIDENT'S MEDAL for best Shetland Pony.

J. Douglas Fletcher of Rosehaugh, Avoch, "Harold" (117).

CLASS 67. STALLION, not exceeding 10½ hands, foaled before 1st January 1893.—Premiums, £4, £2, and £1.

1. The Ladies Hope, Manor Farm, Guildford, "Oman" (33).
2. The Marquis of Londonderry, K.G., Maryfield Farm, Bressay, Shetland, "Runalf" (62).
3. Countess of Hopetoun, Hopetoun House, South Queensferry, "Monster."

V.H.C. The Marquis of Londonderry, K.G., Seaham Hall, Seaham Harbour, "Muness" (124).
H.C. R. W. R. Mackenzie, Earlshall, Leuchars, "Pineapple."
C. J. Harriott Bell, Rossie, Forgandenny, "Hacho" (90).

EXTRA STOCK.

V.H.C. J. Douglas Fletcher of Rosehaugh, Avoch, Stallion, "Harold" (117).

CLASS 68. MARE, not exceeding 10½ hands, with Foal at foot.—Premiums, £4, £2, and £1.

1. The Marquis of Londonderry, K.G., Maryfield Farm, Bressay, Shetland, "Vemunda" (678).
2. The Ladies Hope, Manor Farm, Guildford, "Vementry 2d."
3. The Marquis of Londonderry, K.G., Maryfield Farm, Bressay, Shetland, "Thistle."

V.H.C. Alexander Russell, Inchdrewer House, Colinton, "Sheila."
H.C. David Smith, Corsie Hill, Perth, "Veeig" (49).
C. J. A. Campbell, Craigie House, Ayr, "Flo 2d."

CLASS 69. MARE or GELDING, 10½ hands, foaled before 1st January 1893.—Premiums, £4, £2, and £1.

1. J. Douglas Fletcher of Rosehaugh, Avoch, Mare, "Susan."

DRIVING COMPETITIONS.

CLASS 70. Best TURN-OUT of SINGLE HORSE, HARNESS, and TRAP, to be driven in the ring, 15 hands and upwards.—Premiums, £8, £4, and £2.

1. W. Moore, Greenhall, High Blantyre, Mare, "Hawthorn."
2. Edward Ostlere, Dysart, Fife, Mare, "Vote" (6287).
3. Edward Ostlere, Dysart, Fife, Mare, "Moonlight" (5890).

H.C. Alexander Stevenson, Ella House, Falkirk, Stirlingshire, Gelding, "Yankee Boy."

CLASS 71. Best TURN-OUT of SINGLE HORSE, HARNESS, and TRAP, to be driven in the ring, under 15 hands.—Premiums, £8, £4, and £2.

1. Sir Robert Moncreiffe, Bart., Moncreiffe House, Bridge of Earn, Gelding, "Timothy."
2. W. Moore, Greenhall, High Blantyre, Gelding, "Sir Robert."
3. Alexander Gemmell, Carlton Terrace, Ayr, Gelding, "Lord Babbally."

H.C. Miss Marianne Anderson, Barskimming, Mauchline, Ayrshire, Mare, "Preference."

JUMPING COMPETITIONS.

Wednesday, 22d July.

CLASS 1. HORSES, Open.—Premiums, £20, £10, and £5.

1. Sam Bailie, M.R.C.V.S., Castle Street, Newtownards, Ireland, Mare, "Meta."
2. William Cusson, Chester-le-Street, Durham, Mare, "Lady Roger."
3. Marius Bell, Broats, Annan, Mare, "Border Witch."

CLASS 2. PONIES, 14½ hands and under.—Premiums, £5, £3, and £1.

1. Sam Bailie, M.R.C.V.S., Castle Street, Newtownards, Ireland, Mare, "Knockabout."
2. Frank Leburn, Gateside House, Gateside, Fife, Gelding.
3. David Courage, Marischal Street, Aberdeen, Mare, "Silver Queen."

Thursday, 23d July.

CLASS 3. HORSES, Open Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1.—Premiums, £10, £6, and £3.

1. Marius Bell, Broats, Annan, Mare, "Border Witch."
2. William Cusson, Chester-le-Street, Durham, Mare, "Lady Roger."
3. William Cusson, Chester-le-Street, Durham, Gelding, "Sir Roger."

CLASS 4. PONIES, 14½ hands or under, Handicap, hurdles and gate being raised 4 inches for the first-prize winner in Class 2.—Premiums, £5, £3, and £1.

1. David Courage, Marischal Street, Aberdeen, Mare, "Silver Queen."
2. Miss Ramsay, Hope Park, Cupar-Fife, Gelding, "Shamrock."
3. R. Swinhoe, 5 Cross Street, Newcastle, Mare, "Lady Flashlight."

Friday, 24th July.

CLASS 5. HORSES, Open Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 3—4 inches extra for the winner of the two first prizes in Classes 1 and 3.—Premiums, £10, £6, and £3.

1. Miss Scott Elliot, Newton, Dumfries, "Little Wonder."
2. Sam Bailie, M.R.C.V.S., Castle Street, Newtownards, Ireland, Mare, "Knockabout."
3. Sam Bailie, M.R.C.V.S., Castle Street, Newtownards, Ireland, Mare, "Meta."

CLASS 6. PONIES, 14½ hands or under, Handicap, hurdles and gate being raised 4 inches for the winner of the first prize in Class 2 or in Class 4, and 8 inches for winner of the first prize in both these Classes.—Premiums, £3, £2, and £1.

1. Miss Ramsay, Hope Park, Cupar-Fife, Gelding, "Shamrock."
2. David Courage, Marischal Street, Aberdeen, Mare, "Silver Queen."
3. No award.

CHAMPION PRIZE OF £10, given by various Contributors, for most points in Prizes for Jumping by one Exhibitor with one or more horses in above Classes—First Prize to count three points, Second Prize two points, and Third Prize one point—the money to be evenly divided in the event of a tie.

Sam Bailie, M.R.C.V.S., Castle Street, Newtownards, Ireland—nine points.

Thursday Evening, July 23d.

CLASS 1. HORSES, Open.—Premiums, £5, £3, and £2.

1. Sam Bailie, M.R.C.V.S., Castle Street, Newtownards, Ireland, Mare, "Meta."
2. William Cusson, Chester-le-Street, Durham, Mare, "Lady Roger."
3. Marius Bell, Broats, Annan, Mare, "Border Witch."

CLASS 2. PONIES, 14½ hands and under.—Premiums, £3, £2, and £1.

1. David Courage, Marischal Street, Aberdeen, Mare, "Silver Queen."
2. R. Swinhoe, 5 Cross Street, Newcastle, Mare, "Lady Flashlight."
3. No award.

SHEEP

BLACKFACED.

PRESIDENT'S MEDAL for best Pen of Blackfaced Sheep.

J. Archibald, Overshiels, Stow.

Best Blackfaced Tup in Classes 72 *and* 73—Champion Prize of £10, given by Sir T. D. Gibson-Carmichael, Bart., M.P.

J. Archibald, Overshiels, Stow.

CLASS 72. TUP, above one Shear.—Premiums, £10, £5, and £3.

1. J. Archibald, Overshiels, Stow.
2. J. Archibald, Overshiels, Stow.
3. R. & J. Cadzow, Borland, Biggar.

V.H.C. J. Archibald, Overshiels, Stow.
H.C. John Fisher, Auchrioch, Tyndrum.
C. R. & J. Cadzow, Borland, Biggar.

CLASS 73. SHEARLING TUP.—Premiums, £10, £5, and £3.

1. Charles Howatson of Glenbuck, N.B.
2. Charles Howatson of Glenbuck, N.B.
3. Charles Howatson of Glenbuck, N.B.

V.H.C. R. & J. Cadzow, Borland, Biggar.
H.C. Charles Howatson of Glenbuck, N.B.
C. Charles Howatson of Glenbuck, N.B.

CLASS 74. Three EWES, above one Shear, with their Lambs at foot.— Premiums, £8, £4, and £2.

1. John Craig, Innergeldie, Comrie.
2. James R. Dempster, Brownhill, Strathaven.
3. James Macfarlane, Ashiestiel, Galashiels.

V.H.C. John Craig, Innergeldie, Comrie.
H.C. D. T. Martin, Girgenti, Irvine.

CLASS 75. Three SHEARLING EWES or GIMMERS.— Premiums, £8, £4, and £2.

1. Donald Turner Martin, Girgenti, Irvine.
2. Donald Turner Martin, Girgenti, Irvine.

CHEVIOT.

PRESIDENT'S MEDAL for best Pen of Cheviot Sheep.

John Elliot, Hindhope, Jedburgh.

CLASS 76. TUP, above one Shear.—Premiums, £10, £5, and £3.

1. John Elliot, Hindhope, Jedburgh.
2. John Robson, Newton, Bellingham.
3. John Elliot, Hindhope, Jedburgh.

V.H.C. John A. Johnstone, Archbank, Moffat.
H.C. Jacob Robson, Byrness, Otterburn, Northumberland.
C. Jacob Robson, Byrness, Otterburn, Northumberland.

CLASS 77. SHEARLING TUP.—Premiums, £10, £5, and £3.

1. John Elliot, Hindhope, Jedburgh.
2. John Elliot, Hindhope, Jedburgh.
3. John Elliot, Hindhope, Jedburgh.

V.H.C. John Robson, Newton, Bellingham.
H.C. John Robson, Newton, Bellingham.
C. John A. Johnstone, Archbank, Moffat.

CLASS 78. Three EWES, above one Shear, with their Lambs at foot.— Premiums, £8, £4, and £2.

1. John Robson, Newton, Bellingham.
2. Jacob Robson, Byrness, Otterburn, Northumberland.
3. A. & J. K. Smith, Thorlieshope, Newcastleton.

V.H.C. Jacob Robson, Byrness, Otterburn, Northumberland.
H.C. John Robson, Newton, Bellingham.
C. James A. Rollo, Rodney Lodge, Perth.

CLASS 79. Three SHEARLING EWES or GIMMERS.—Premiums, £8, £4, and £2.

1. Jacob Robson, Byrness, Otterburn, Northumberland.
2. John Robson, Newton, Bellingham.
3. Jacob Robson, Byrness, Otterburn, Northumberland.

BORDER LEICESTER.

PRESIDENT'S MEDAL for best Pen of Border Leicesters.

The Right Hon. A. J. Balfour, M.P., Whittinghame, Prestonkirk.

THE TWEEDDALE GOLD MEDAL, value £20, for best Border Leicester Tup.

Robert Wallace, Auchenbrain, Mauchline.

CLASS 80. TUP, above one Shear.—Premiums, £10, £5, and £3.

1. The Right Hon. A. J. Balfour, M.P., Whittinghame, Prestonkirk.
2. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh.
3. George Pople, Newhouse, Perth.
V.H.C. J. Douglas Fletcher of Rosehaugh, Avoch, N.B.
H.C. The Right Hon. A. J. Balfour, M.P., Whittinghame, Prestonkirk.
C. T. M. Nicoll, Littleton, Kirriemuir.

CLASS 81. SHEARLING TUP.—Premiums, £10, £5, and £3.

1. Robert Wallace, Auchenbrain, Mauchline.
2. His Grace The Duke of Buccleuch and Queensberry, K.T., Dalkeith Park, Dalkeith.
3. Robert Wallace, Auchenbrain, Mauchline.
V.H.C. Robert Wallace, Auchenbrain, Mauchline.
H.C. Thomas Clark, Oldhamstocks Mains, Cockburnspath.
C. Robert Wallace, Auchenbrain, Mauchline.

CLASS 82. Three EWES, above one Shear.—Premiums, £8, £4, and £2.

1. The Right Hon. A. J. Balfour, M.P., Whittinghame, Prestonkirk.
2. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh.
3. The Right Hon. A. J. Balfour, M.P., Whittinghame, Prestonkirk.
H.C. George Pople, Newhouse, Perth.
C. W. S. Ferguson, Kinochtry, Coupar-Angus.

CLASS 83. Three SHEARLING EWES or GIMMERS.—Premiums, £8, £4, and £2.

1. Thomas Clark, Oldhamstocks Mains, Cockburnspath.
2. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh.
3. His Grace The Duke of Buccleuch and Queensberry, K.T., Dalkeith Park, Dalkeith.
V.H.C. G. Russell Tress, Whitelee, St Boswells.
H.C. James Campbell, Illieston, Mid-Calder.
C. Robert Taylor, Pitlivie, Carnoustie.

SHROPSHIRE.

PRESIDENT'S MEDAL for best Pen of Shropshires.

R. P. Cooper, Shenstone Court, Lichfield.
Reserve. David Buttar, Corston, Coupar-Angus.

CLASS 84. TUP, above one Shear.—Premiums, £6, £4, and £2.

1. David Buttar, Corston, Coupar-Angus.
2. R. P. Cooper, Shenstone Court, Lichfield.
3. David Buttar, Corston, Coupar-Angus.
V.H.C. Col. T. A. Irwin, Lynehow, near Carlisle.

CLASS 85. SHEARLING TUP.—Premiums, £6, £4, and £2.

1. R. P. Cooper, Shenstone Court, Lichfield.
2. David Buttar, Corston, Coupar-Angus.
3. The Earl of Strathmore, Home Farm, Glamis Castle, Glamis.
V.H.C. David Buttar, Corston, Coupar-Angus.
H.C. David Buttar, Corston, Coupar-Angus.
H.C. David Buttar, Corston, Coupar-Angus.
C. David Buttar, Corston, Coupar-Angus.
C. David Buttar, Corston, Coupar-Angus.
C. The Earl of Strathmore, Home Farm, Glamis Castle, Glamis.

Class 86. Three EWES, above one Shear.—Premiums, £5, £3, and £2

1. David Buttar, Corston, Coupar-Angus.
2. David Buttar, Corston, Coupar-Angus.

Class 87. Three SHEARLING EWES or GIMMERS.—Premiums, £5, £3, and £2.

1. David Buttar, Corston, Coupar-Angus.
2. The Earl of Strathmore, Home Farm, Glamis Castle, Glamis.
3. R. P. Cooper, Shenstone Court, Lichfield.

V.H.C. David Buttar, Corston, Coupar-Angus.

EXTRA SECTIONS.

Class 88. Three BLACKFACED WETHERS, one Shear.—Premiums, £4 and £2.

1. John Gilmour of Lundin and Montrave, Leven, Fife.
2. John Gilmour of Lundin and Montrave, Leven, Fife.

H.C. E. G. Baxter of Teasses, Largo.

Class 89. Three CHEVIOT WETHERS, one Shear.—Premiums, £4 and £2.

1. Alex. Guild, Greenhead, Pencaitland.
2. H. W. Hope, Luffness Mains, Drem.

C. Sir G. Graham Montgomery, Bart., Stobo Castle, Stobo, Peeblesshire.

Class 90. Three SHEARLING WETHERS, any Cross, out of Blackfaced Ewes.—Premiums, £4 and £2.

1. W. S. Ferguson, Balgarvie, Perth.
2. John Gilmour of Lundin and Montrave, Leven, Fife.

V.H.C. William Watt, Middlefield, Cupar-Fife.
C. George F. Barron, Meikle Endovie, Alford.

Class 91. Five FAT LAMBS, any Breed or Cross.—Premiums, £4 and £2. Given by the Society.

1. Alex. Anderson, Berryhill, Dundee.
2. Alex. Anderson, Berryhill, Dundee.

H.C. George F. Barron, Meikle Endovie, Alford.

Best Pens of Cross-bred Lambs in Class 91 *got by Shropshire Tups*—Prizes, £5, £3, and £2, given by Scotch Breeders of Shropshire Sheep, per Mr David Buttar.

1. Alex. Anderson, Berryhill, Dundee.
2. Alex. Anderson, Berryhill, Dundee.
3. George F. Barron, Meikle Endovie, Alford.

EXTRA SHEEP.

C. F. W. Christie, Dairsie Mains, Cupar, 5 Shetland Gimmers.

SWINE

PRESIDENT'S MEDAL for best Pen of Swine.

The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh, "Joan of Arc III." (5872).

LARGE WHITE BREED.

Class 92. BOAR.—Premiums, £4 and £2.

1. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh, "Masterpiece."
2. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh, "Fusilier" (3945).

CLASS 93. Sow.—Premiums, £4 and £2.

1. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh, "Joan of Arc III." (5872).
2. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh, "Dalmeny Empress" (6516).

CLASS 94. Three PIGS, not above 8 months old.—Premiums, £4 and £2.

1. The Earl of Rosebery, K.G., Dalmeny Park, Edinburgh.

WHITE BREED OTHER THAN LARGE.

CLASS 95. BOAR.—Premiums, £4 and £2.

2. Robert M'Leod, Oakbank Cottage, Aberdeen, "Rampo."

CLASS 96. SOW.—Premiums, £4 and £2.—*No Entry.*

CLASS 97. Three Pigs, not above 8 months old.—Premiums, £4 and £2.

(*Entry not forward.*)

'BERKSHIRE.

CLASS 98. BOAR.—Premiums, £4 and £2.

2. Mrs Clayhills Henderson, Invergowrie, Dundee.
V.H.C. Captain Clayhills Henderson, R.N., Invergowrie, Dundee.

CLASS 99. SOW.—Premiums, £4 and £2.

1. Captain Clayhills Henderson, R.N., Invergowrie, Dundee.
2. Captain Clayhills Henderson, R.N., Invergowrie, Dundee.
C. Captain Clayhills Henderson, R.N., Invergowrie, Dundee.

CLASS 100. Three Pigs, not above 8 months old.—Premiums, £4 and £2.

(*Entries not forward.*)

POULTRY

First Premium—*One Sovereign.* Second Premium—*Ten Shillings.* One *Commended* Ticket—in all the Sections.

CLASS 1. DORKING, Silver Grey. Cock.

1. John Paterson, Sherwood, Paisley.
2. William Hall, Keir Cottages, Dunblane.
C. James Annand, 104 Mid Street, Keith.

CLASS 2. DORKING, Silver Grey. Hen.

1. James Clunas, High Street, Elgin.
2. James Clunas, High Street, Elgin.
C. John Paterson, Sherwood, Paisley.

CLASS 3. DORKING, Silver Grey. Cockerel.

1. James Clunas, High Street, Elgin.
2. James Glen, 5 West Breast, Greenock.
C. John Paterson, Sherwood, Paisley.

CLASS 4. DORKING, Silver Grey. Pullet.

1. Robert Wood, Panmure, Carnoustie.
2. James Clunas, High Street, Elgin.
C. James Clunas, High Street, Elgin.

CLASS 5. DORKING, Coloured. Cock.

1. John Gillies, Edington Mills, Chirnside.
2. J. T. Cathcart, Dunbog House, Newburgh.
C. Leonard Pilkington, Cavens, Dumfries.

CLASS 6. DORKING, Coloured. Hen.

1. John Gillies, Edington Mills, Chirnside.
2. Andrew K. Crichton, Glamis.
C. Leonard Pilkington, Cavens, Dumfries.

CLASS 7. DORKING, Coloured. Cockerel.

1. J. T. Cathcart, Dunbog House, Newburgh.
2. J. T. Cathcart, Dunbog House, Newburgh.
C. John Gillies, Edington Mills, Chirnside.

CLASS 8. DORKING, Coloured. Pullet.

1. Andrew K. Crichton, Glamis.
2. Andrew K. Crichton, Glamis.
C. Leonard Pilkington, Cavens, Dumfries.

CLASS 9. COCHIN-CHINA. Cock.

1. George Archibald, Strathkinnes, by St Andrews.
2. Mrs Leslie, 28 Elmfield Avenue, Aberdeen.
C. George H. Procter, Flass House, Durham.

CLASS 10. COCHIN-CHINA. Hen.

1. D. J. Thomson Gray, Innerpeffray Lodge, Crieff.
2. Alexander Ferguson, North Inglis Street, Dunfermline.
C. Dr A. Richmond, 9 St James Place, Paisley.

CLASS 11. COCHIN-CHINA. Cockerel.

1. Dr A. Richmond, 9 St James Place, Paisley.
2. Mrs Leslie, 28 Elmfield Avenue, Aberdeen.

CLASS 12. COCHIN-CHINA. Pullet.

1. D. J. Thomson Gray, Innerpeffray Lodge, Crieff.

CLASS 13. BRAHMAPOOTRA. Cock.

1. John Gillies, Edington Mills, Chirnside.
2. John Gillies, Edington Mills, Chirnside.
C. James Lorimer, Sandridge Cottage, Monifieth.

CLASS 14. BRAHMAPOOTRA. Hen.

1. John Gillies, Edington Mills, Chirnside.
2. Mrs Leslie, 28 Elmfield Avenue, Aberdeen.
C. James Lorimer, Sandridge Cottage, Monifieth.

CLASS 15. BRAHMAPOOTRA. Cockerel.

1. William Cæsar, Lochty House, Carnoustie.
2. Mrs Leslie, 28 Elmfield Avenue, Aberdeen.

CLASS 16. BRAHMAPOOTRA. Pullet.

1. D. J. Thomson Gray, Innerpeffray Lodge, Crieff.
2. William Cæsar, Lochty House, Carnoustie.
C. D. J. Thomson Gray, Innerpeffray Lodge, Crieff.

CLASS 17. SCOTCH GREY. Cock.

1. Archibald Mitchell, Airth Castle, by Larbert.
2. David Hastings, Glaister Lodge, Darvel.
C. Alexander Smith, Innes House, Elgin.

CLASS 18. SCOTCH GREY. Hen.

1. Archibald Mitchell, Airth Castle, by Larbert.
2. A. W. Henderson, Airthrey Mills, Bridge of Allan.
C. David Hastings, Glaister Cottage, Darvel.

CLASS 19. SCOTCH GREY. Cockerel.

1. A. W. Henderson, Airthrey Mills, Bridge of Allan.
2. W. S. Mitchell, Airth Castle, Larbert.
C. David Hastings, Glaister Cottage, Darvel.

CLASS 20. SCOTCH GREY. Pullet.

1. A. W. Henderson, Airthrey Mills, Bridge of Allan.
2. William Crawford, jun., Mauraehead, Beith.
C. W. S. Mitchell, Airth Castle, Larbert.

CLASS 21. HAMBURG. Cock.

1. James Huntly, Edington Mills, Chirnside.
2. William Kerr, Bandeath, Stirling.
C. J. M. Campbell, Bonny Kelly, New Pitsligo.

CLASS 22. HAMBURG. Hen.

1. James Huntly, Edington Mills, Chirnside.
2. Stephen Brotherston, Buteland Farm, Balerno.
C. J. M. Campbell, Bonny Kelly, New Pitsligo.

CLASS 23. HAMBURG. Cockerel.

1. James Huntly, Edington Mills, Chirnside.
2. Stephen Brotherston, Buteland Farm, Balerno.
C. J. M. Campbell, Bonny Kelly, New Pitsligo.

CLASS 24. HAMBURG. Pullet.

1. Maurice Jackson, High Green Farm, Silsden, Keighley, Yorkshire.
2. James Huntly, Edington Mills, Chirnside.
C. J. M. Campbell, Bonny Kelly, New Pitsligo.

CLASS 25. PLYMOUTH ROCK. Cock.

1. Leonard Pilkington, Cavens, Dumfries.
2. John B. Tulloch, The Dales, Inverkeithing.

CLASS 26. PLYMOUTH ROCK. Hen.

1. John B. Tulloch, The Dales, Inverkeithing.
2. Leonard Pilkington, Cavens, Dumfries.

CLASS 27. PLYMOUTH ROCK. Cockerel.

1. Rev. Fitzroy Lloyd, The Priory, Pittenweem.
2. Rev. Fitzroy Lloyd, The Priory, Pittenweem.
C. John B. Tulloch, The Dales, Inverkeithing.

CLASS 28. PLYMOUTH ROCK. Pullet.

1. Rev. Fitzroy Lloyd, The Priory, Pittenweem.
2. Charles Walker, 7 Bruce Street, Dundee.
C. John M. Martin of Auchendennan, Balloch.

CLASS 29. MINORCA. Cock.

1. Alexander M. Prain, Rawes Farm, Longforgan.
2. William S. Craig, 21 Dundas Street, Bonnyrigg.

CLASS 30. MINORCA. Hen.

1. Mrs R. Pullar, 19 Peddie Street, Dundee.
2. James Scott, Forthill Cottages, Maryfield Road, Broughty-Ferry.
C. John E. Kidd, 18 Methven Street, Perth.

CLASS 31. MINORCA. Cockerel.

1. John Lawson, Rose Cottage, Culross.
2. David Miller, Berfern Farm, Inverkip.
C. James Scott, Forthill Cottages, Maryfield Road, Broughty-Ferry.

CLASS 32. MINORCA. Pullet.

1. John Smith, Dundas, South Queensferry.
2. M. B. Thomson, Park, Renfrew.
C. David Miller, Berfern Farm, Inverkip.

CLASS 33. LEGHORN. Cock—*No Entry.*

CLASS 34. LEGHORN. Hen.

1. Laurence Anderson, 9 Reform Street, Dunfermline.
2. Laurence Anderson, 9 Reform Street, Dunfermline.

CLASS 35. LEGHORN. Cockerel.

1. Robert Durward, Dunecht, Aberdeenshire.
2. John Gillies, Edington Mills, Chirnside.

CLASS 36. LEGHORN. Pullet.

1. W. Jamieson, 50 David's Loan, Bainsford, Falkirk.
2. Laurence Anderson, 9 Reform Street, Dunfermline.
C. John Gillies, Edington Mills, Chirnside.

CLASS 37. LANGSHAN. Cock.

1. W. Stewart, Battleby Smithy, by Perth.
2. Thomas H. S. Haxton, Glendevon, by Dollar.
C. Robert Mathews, 26 Castle Street, Dumfries.

CLASS 38. LANGSHAN. Hen.

1. Mrs R. Pullar, 19 Peddie Street, Dundee.

CLASS 39. LANGSHAN. Cockerel—*No Entry.*

CLASS 40. LANGSHAN. Pullet.

1. Robert Mathews, 26 Castle Street, Dumfries.

CLASS 41. WYANDOTTE. Cock.

1. Henry Maidment, Lanercost, Brampton, Cumberland.
2. T. & W. Hope, Banks, Brampton, Cumberland.
C. Henry Maidment, Lanercost, Brampton, Cumberland.

CLASS 42. WYANDOTTE. Hen.

1. T. & W. Hope, Banks, Brampton, Cumberland.
2. Henry Maidment, Lanercost, Brampton, Cumberland.

CLASS 43. WYANDOTTE. Cockerel.

1. Henry Maidment, Lanercost, Brampton, Cumberland.
2. T. & W. Hope, Banks, Brampton, Cumberland.
C. Mrs Kinnaird, Clockmill, Duns.

CLASS 44. WYANDOTTE. Pullet.

1. Mrs Kinnaird, Clockmill, Duns.
2. T. & W. Hope, Banks, Brampton, Cumberland.
C. Henry Maidment, Lanercost, Brampton, Cumberland.

CLASS 45. Any other Pure Breed. Cock.

1. Mrs D. Mackenzie, Maryfield, Meigle (Spanish).
2. J. Stewart Lyon, Kirkmichael, Dumfries (Orpington).
C. John G. Robertson, Caberfrigh Poultry Farm, Dingwall (Spanish).

CLASS 46. Any other Pure Breed. Hen.

1. John G. Robertson, Caberfrigh Poultry Farm, Dingwall (Spanish).
2. Mrs Davie, South Inglis Street, Dunfermline (Malay).
C. Mrs D. Mackenzie, Maryfield, Meigle (Spanish).

CLASS 47. Any other Pure Breed. Cockerel.

1. Earl of Mansfield, Balboughty, Perth (White Dorking).
2. Mrs D. Mackenzie, Maryfield, Meigle (Spanish).
C. J. Stewart Lyon, Kirkmichael, Dumfries (Orpington).

CLASS 48. Any other Pure Breed. Pullet.

1. Mrs D. Mackenzie, Maryfield, Meigle (Spanish).
2. Mrs Davie, South Inglis Street, Dunfermline (Malay).
C. J. Stewart Lyon, Kirkmichael, Dumfries (Orpington).

CLASS 49. GAME—Black or Brown Reds. Cock.

1. William A. Gibson, 21 Dundee Loan, Forfar.
2. D. & J. Wishart, 13 Little Causeway, Forfar.
C. Leonard Pilkington, Cavens, Dumfries.

CLASS 50. GAME—Black or Brown Reds. Hen.

1. Leonard Pilkington, Cavens, Dumfries.
2. D. & J. Wishart, 13 Little Causeway, Forfar.

CLASS 51. GAME—Black or Brown Reds. Cockerel.

1. D. & J. Wishart, 13 Little Causeway, Forfar.
2. Leonard Pilkington, Cavens, Dumfries.

CLASS 52. GAME—Black or Brown Reds. Pullet.

1. Leonard Pilkington, Cavens, Dumfries.
2. D. & J. Wishart, 13 Little Causeway, Forfar.

CLASS 53. GAME—Any other Pure Breed. Cock.

1. William A. Gibson, 21 Dundee Loan, Forfar (Pile).
2. Alexander Shepherd, 59 Dundee Loan, Forfar (Pile).

CLASS 54. GAME—Any other Pure Breed. Hen.

1. Alexander Shepherd, 59 Dundee Loan, Forfar (Pile).
2. John G. Robertson, Caberfrigh Poultry Farm, Dingwall (Pile).

CLASS 55. GAME—Any other Pure Breed. Cockerel.

1. D. & J. Wishart, 13 Little Causeway, Forfar (Pile).
2. William A. Gibson, 21 Dundee Loan, Forfar (Pile).

CLASS 56. GAME—Any other Pure Breed. Pullet.

1. William Harris, 50 West High Street, Forfar.
2. D. & J. Wishart, 13 Little Causeway, Forfar (Pile).
C. John G. Robertson, Caberfrigh Poultry Farm, Dingwall.

CLASS 57. BANTAM—Any Pure Breed. Cock.

1. Thomas Guild, Herdhill Farm, Kirriemuir.
2. Robert Frew, The Barony, Cupar-Fife.
C. William Hynd, 196 Baldridgeburn, Dunfermline.

CLASS 58. BANTAM—Any Pure Breed. Hen.

1. Thomas Guild, Herdhill Farm, Kirriemuir.
2. John Meikle, Estates Offices, Auchincruive, Ayr (Black Rose-comb).
C. William Hynd, 196 Baldridgeburn, Dunfermline.

CLASS 59. BANTAM—Any Pure Breed. Cockerel.

1. Thomas Guild, Herdhill Farm, Kirriemuir.
2. Hynd Brothers, 21 Parkneuk, Dunfermline.
C. Matthew Smith, Townhead Farm, Thornhill, Dumfriesshire (Scotch Grey).

Class 60. BANTAM—Any Pure Breed. Pullet.

1. Thomas Guild, Herdhill Farm, Kirriemuir.
2. Peter Morris, 129 Whitemyre, Dunfermline.
C. Hynd Brothers, 21 Parkneuk, Dunfermline.

Class 61. DUCKS—White Aylesbury. Drake.

1. John Gillies, Edington Mills, Chirnside.
2. John Gillies, Edington Mills, Chirnside.
C. Miss Blackburn, Killearn, Glasgow.

Class 62. DUCKS—White Aylesbury. Duck.

1. John Gillies, Edington Mills, Chirnside.
2. John Gillies, Edington Mills, Chirnside.
C. Mrs A. F. Durkie, Mill of Mains, Dundee.

Class 63. DUCKS—White Aylesbury. Drake (Young).

1. John Gillies, Edington Mills, Chirnside.
2. John Gillies, Edington Mills, Chirnside.
C. J. Stewart Lyon, Kirkmichael, Dumfries.

Class 64. DUCKS—White Aylesbury. Duckling.

1. John Gillies, Edington Mills, Chirnside.
2. John Gillies, Edington Mills, Chirnside.
C. J. Stewart Lyon, Kirkmichael, Dumfries.

Class 65. DUCKS—Rouen. Drake.

1. John Gillies, Edington Mills, Chirnside.
2. James Dow, Clathybeg, Auchterarder.
C. Thomas Scott, South Woodend, Bonnybridge.

Class 66. DUCKS—Rouen. Duck.

1. Thomas Scott, South Woodend, Bonnybridge.
2. John Gillies, Edington Mills, Chirnside.

Class 67. DUCKS—Rouen. Drake (Young).

1. John Gillies, Edington Mills, Chirnside.
2. Maurice Jackson, High Green Farm, Silsden, near Keighley, Yorkshire.
C. John G. Robertson, Caberfrigh Poultry Farm, Dingwall.

Class 68. DUCKS—Rouen. Duckling.

1. John Gillies, Edington Mills, Chirnside.
2. John Gillies, Edington Mills, Chirnside.
C. Lady Wilson, Chillingham Barns, Belford, Northumberland.

Class 69. DUCKS—Any other Pure Breed. Drake.

1. E. H. Graham-Stirling, Strowan, Crieff (Pekin).
2. Miss L. M. Smith, Ballantager, Collessie, Fife (Pekin).
C. Lady Wilson, Chillingham Barns, Belford, Northumberland (Cayuga).

Class 70. DUCKS—Any other Pure Breed. Duck.

1. Miss L. M. Smith, Ballantager, Collessie, Fife (Pekin).
2. E. H. Graham-Stirling, Strowan, Crieff (Pekin).
C. Lady Wilson, Chillingham Barns, Belford, Northumberland (Cayuga).

Class 71. DUCKS—Any other Pure Breed. Drake (Young).

1. D. J. Thomson Gray, Innerpeffray Lodge, Crieff (Pekin).
2. Miss L. M. Smith, Ballantager, Collessie, Fife (Pekin).
C. E. H. Graham-Stirling, Strowan, Crieff (Pekin).

Class 72. DUCKS—Any other Pure Breed. Duckling.

1. Miss L. M. Smith, Ballantager, Collessie, Fife (Pekin).
2. D. J. Thomson Gray, Innerpeffray Lodge, Crieff (Pekin).

CLASS 73. TURKEYS—Any Pure Breed. Cock.

1. Lady Wilson, Chillingham Barns, Belford, Northumberland.
2. Alexander Clark, Balmullo, Leuchars (American Bronze).
C. Miss Mary Shanks, Cuthelton Farm, Denny (Bronze).

CLASS 74. TURKEYS—Any Pure Breed. Hen.

1. Lady Wilson, Chillingham Barns, Belford, Northumberland.
2. G. A. Bell, Downfield, Ladybank (American Bronze).
C. John M. Martin of Auchendennan, Balloch.

CLASS 75. TURKEYS—Any Pure Breed. Cock (Poult).

1. C. G. Meldrum, Manse of Logierait, Ballinluig (American Bronze).
2. Earl of Mansfield, Balboughty, Perth.
C. G. A. Bell, Downfield, Ladybank (American Bronze).

CLASS 76. TURKEYS—Any Pure Breed. Hen (Poult).

1. G. A. Bell, Downfield, Ladybank (American Bronze).
2. Earl of Mansfield, Balboughty, Perth.
C. James Dow, Clathybeg, Auchterarder (Bronze).

CLASS 77. GEESE—Any Pure Breed. Gander.

1. James Dow, Clathybeg, Auchterarder (Emden).
2. John M. Martin of Auchendennan, Balloch (Toulouse).
C. James Dow, Clathybeg, Auchterarder (Emden).

CLASS 78. GEESE—Any Pure Breed. Goose.

1. Thomas Scott, South Woodend, Bonnybridge.

CLASS 79. GEESE—Any Pure Breed. Gander (Young).

1. Thomas Scott, South Woodend, Bonnybridge.
2. James Dow, Clathybeg, Auchterarder (Emden).
C. John M. Martin of Auchendennan, Balloch (Toulouse).

CLASS 80. GEESE—Any Pure Breed. Gosling.

1. Thomas Scott, South Woodend, Bonnybridge.
2. James Dow, Clathybeg, Auchterarder (Emden).
C. D. J. Thomson Gray, Innerpeffray Lodge, Crieff.

DAIRY PRODUCE

CLASS 1. CURED BUTTER, not less than 7 lb.—Premiums, £4, £2, and £1.

1. George Wallace, Kinglass Farm, Bo'ness.
2. David Longwill, Kendieshill, Linlithgow.
3. William Whyte, Middlepenny, Langbank.
V.H.C. Robert Gilmour, Stonebyres, Eaglesham.
H.C. William Paterson, Barnego, Denny.
C. Alexander M'Intosh, Greenhill, Houston.

CLASS 2. POWDERED BUTTER, not less than 7 lb.—Premiums, £4, £2, and £1.

1. George Wallace, Kinglass Farm, Bo'ness.
2. William Paterson, Barnego, Denny.
3. William Whyte, Middlepenny, Langbank.
V.H.C. David Longwill, Kendieshill, Linlithgow.
H.C Robert Gilmour, Stonebyres, Eaglesham.
C. Alexander M'Intosh, Greenhill, Houston.

CLASS 3. FRESH BUTTER, Three 1-lb. Rolls.—Premiums, £4, £2, and £1.

1. William Paterson, Barnego, Denny.
2. David Longwill, Kendieshill, Linlithgow.
3. George Wallace, Kinglass Farm, Bo'ness.
V.H.C. William Whyte, Middlepenny, Langbank.
H.C. John Mitchell, Wester Bogie, Kirkcaldy.
C. Alexander M'Intosh, Greenhill, Houston.

HORSE-SHOEING

(*Prizes given by various Contributors, per Mr W. S. Ferguson and Mr Andrew Hutcheson.*)

OPEN TO SHOEING-SMITHS FROM ANY PART OF THE COUNTIES OF PERTH, FORFAR, FIFE, AND KINROSS.

CLASS 1. DRAUGHT HORSES.—Premiums, £3, £2, and £1.

1. Robert Saunders, South Ward Road, Dundee.
2. William Beattie, Kirksteps, Coupar-Angus.
3. Charles Stewart, Ley of Hallyburton, Coupar-Angus.

CLASS 2. ROADSTERS.—Premiums, £3, £2, and £1.

1. Robert Saunders, South Ward Road, Dundee.
2. George Lawson, 23 Princes Street, Perth.
3. Alexander Addison, 28 Watt Street, Dundee.

C. Robert Henderson, 19 Charles Street, Dundee.

TRIAL OF CORN-DRESSING MACHINES

Premiums, £15 and £5.

1. Improved "Eclipse" pattern Combined Blowing, Winnowing, Corn-Dressing, and Screening Machine; made and exhibited by Thomas Corbett, Perseverance Iron Works, Shrewsbury—Price £10, 10s.
2. Patent "Eclipse" Combined Blowing, Winnowing, Corn-Dressing, and Screening Machine; made and exhibited by Thomas Corbett, Perseverance Iron Works, Shrewsbury—Price £11, 17s. 6d.

HORSELESS CARRIAGES

The Daimler Motor Co. (Limited), 40 Holburn Viaduct, London, E.C.—Silver Medal for Two-seated Motor Carriage.

JUDGES.

Shorthorn.—J. Deane Willis, Bapton Manor, Codford St Mary, Bath; James M'William, Stoneytown, Keith.

Aberdeen-Angus.—George J. Walker, Portlethen, Aberdeen; Andrew Mackenzie, Dalmore, Alness, Ross-shire.

Galloway.—John M'Cormick, Lochenkit, Corsock, Dalbeattie; Samuel Clark, Netherthird, Castle-Douglas.

Highland.—Duncan M'Diarmid, Camusericht, Rannoch, Perthshire; John Campbell, Calvine, Blair-Athole.

Ayrshire.—John Cochrane, Nether Craig, Kilmarnock.

Stallions, Entire Colts, and Draught Geldings.—James Weir, Sandilands, Lanark; John Morrison, Hattonslap, Old Meldrum.

Mares and Fillies.—David Buchanan, Garscadden Mains, Bearsden, N.B.; William Taylor, Park Mains, Renfrew.

Hunters and Roadsters.—E. D. Prothero, Glenburn, Prestwick.

Hackneys.—Alfred Craggy, Manor House, North Newbald, Brough.

Ponies.—J. W. J. Paterson, Terrona, Langholm.

Shetland Ponies.—John J. R. Meiklejohn, Dalgheal, Novar, Evanton, Ross-shire.

Blackfaced—Robert Watson, Culterallers, Biggar; William Gordon, Auchallater, Ballater.

Cheviot.—Charles Scott, Milsington, Hawick; Francis Paterson, Clerkhill, Langholm.

Border Leicester.—John Mark, Sunnyside, Prestonkirk; Matthew Ridley, Peel Well, Haydon Bridge.

Shropshire.—W. Barrs, Odstone Hall, Atherstone.

Fat Sheep.—John Moncrieff, Tofthill, Perth.

Swine.—George Inglis, of Newmore, Invergordon.

Poultry.—John Cran, Old Keith, Keith.

Butter.—John Drysdale, Fairfield Farming Company, Limited, Kippen, Stirlingshire.

ATTENDING MEMBERS.

Shorthorn.—John Ballingall, James T. Cathcart, George Prentice, John Bell.

Aberdeen-Angus. — W. T. Malcolm, John Black, Thomas A. Buttar, John Paton.

Galloway. — Robert Paterson, W. White, George Pople.

Highland. — Sir Robert Menzies, Bart., James Small, Alex. Robertson.

Ayrshire.—John Speir, T. W. Greig, T. M. Nicoll.

Stallions, Entire Colts, and Draught Geldings.—R. Sinclair Scott, Captain Clayhills Henderson, C. A. Murray, David Dow, T. S. Thoms.

Mares and Fillies.—John M. Martin, William Duthie, Alex. Lawson, Geo. Willsher, Thos. Hollingworth.

Hunters and Roadsters. — James Hope, Lord Provost Dewar, Jas. A. Rollo, D. Cunningham, Jas. Tod, James Wylie, Edinburgh.

Hackneys.—David Wilson, jun., Sir Ralph Anstruther, Bart., L. Johnston, John Dickson, James Graham.

Ponies. — George Dun, W. Hunter, J. F. Stewart, J. S. Stenhouse.

Shetland Ponies.—John Cran, J. H. Baxter.

Blackfaced.—Alex. Macduff, C. M. Cameron, F. W. Christie, C. Munro.

Cheviot.—R. Shirra Gibb, W. Arnot, Joseph Murray.

Border Leicester.—John Wilson, Colonel Smythe, R. Anderson.

Shropshire.—Charles Howatson, John Hill.

Fat Sheep.—Alex. Cross, Geo. Reid, W. Dunn.

Swine.—A. M. Gordon, Bailie Smart.

Poultry.—James I. Davidson, Dean of Guild Hay.

Butter. —Bailie Cuthbert, Treasurer Chalmers.

Horse-Shoeing—Robert Paterson, W. T. Malcolm, John Ballingall, W. Tod, Bailie MacLeish, W. Tasker, D. Cunningham.

II.—DISTRICT COMPETITIONS.

CATTLE, HORSES, AND SHEEP.

NAME OF DIST.	PREMIUM AWARDED TO	FOR	AMOUNT.
Argyll	Archd. Turner, Kilchamaig	West Highland Bull . .	£1 10 0
	J. Campbell of Kilberry	do. Cow . .	1 10 0
	Allan M'Dougall, Port Ellen	Ayrshire Bull . . .	1 10 0
	Allan M'Dougall, Port Ellen	do. Cow . . .	1 10 0
	Archd. Turner, Kilchamaig	Blackfaced Tup . . .	1 10 0
	Wm. Maxwell, Baraskomel	do.	1 10 0
	William Young, Drum	Clydesdale Brood Mare . .	1 10 0
	Wm. Maxwell, Baraskomel	do. Yeld Mare . .	1 10 0
Carrick	Quintin Dunlop, Morriston	Blackfaced Tup . . .	2 0 0
	Alex. Cross of Knockdon	Leicester Tup . . .	2 0 0
	James Hamilton, Drumburle	Ayrshire Bull . . .	2 0 0
	Alex. Cross of Knockdon	do. Cow . . .	2 0 0
	Alex. Cross of Knockdon	Clydesdale Mare . . .	2 0 0
	Alex. Cross of Knockdon	do. . . .	2 0 0
Morayshire	J. R. Findlay of Aberlour	Aberdeen-Angus Cow . .	3 0 0
	George Bruce, Tochineal	do. Heifer .	1 10 0
	George Bruce, Tochineal	do. Ox . .	3 0 0
	George Bruce, Tochineal	do. Heifer .	1 10 0
	Jas. M'William, Stoneytown	Leicester Ewes . . .	2 0 0
	Jas. M'William, Stoneytown	do. Gimmers . .	1 0 0
Forth	James Hamilton, Woolfords	Ayrshire Cow . . .	1 10 0
	James Hamilton, Woolfords	do.	1 0 0
	James Crawford, Hillhead	do.	0 10 0
	James Smith, Mountainblow	Ayrshire Bull . . .	1 10 0
		Carry forward .	£40 10 0

NAME OF DIST.	PREMIUM AWARDED TO	FOR	AMOUNT.
		Brought forward	£40 10 0
Forth—contd.	David M'Culloch, East Forth	Ayrshire Bull	1 0 0
	William Templeton, Mosside	do.	0 10 0
	John Weir, Townhead	Clydesdale Filly	1 10 0
	William Fleming, Calla	do.	1 0 0
	William Barr, Burnhead	do.	0 10 0
	James Hamilton, Woolfords	Blackfaced Tup	1 10 0
	James Hamilton, Woolfords	do.	1 0 0
	James Smith, Mountainblow	do.	0 10 0
Buchan	Alexander Beddie, Banks	Aberdeen-Angus Bull	1 10 0
	John Littlejohn, Ebriehead	do. do.	1 0 0
	Joseph Penny, Millhill	do. do.	0 10 0
	John King, Backslack	Shorthorn Bull	1 10 0
	John Gall, Middle Hythie	do.	1 0 0
	Jas. Bruce, Inverquhomery	do.	0 10 0
	Wm. Ferguson, Kinmundy	Aberdeen-Angus Heifer	1 10 0
	Alexander Beddie, Banks	do. do.	1 0 0
	James Smith, Burnshangie	do. do.	0 10 0
	John P. Sleigh, Hillhead	Clydesdale Mare	1 10 0
	John Fowlie, Wardhead	do.	1 0 0
	Ainslie & Chalmers, Kinloch	do.	0 10 0
Royal Northern	A. M'Robbie, Sunnyside	Clydesdale Stallion	6 0 0
	Leslie Durno, Mains of Glack	do. Mare	6 0 0
Mid-Annandale	James Crawford, Floshend	Clydesdale Brood Mare	4 0 0
	Robert Paterson, Robgill Tower	do. Yeld Mare	4 0 0
	Robert Paterson, Robgill Tower	do. two-year-old Filly	2 0 0
	Robert Paterson, Robgill Tower	do. one-year-old Filly	2 0 0
Central Banffshire	Colonel Smith, Minmore	Shorthorn Bull	Bronze Medal
	J. R. Findlay of Aberlour	Aberdeen-Angus Cow	do.
	Geo. Ferguson, Lessendrum	Clydesdale Mare	do.
Strathspey	John Grant, Advie Mains	Aberdeen-Angus Bull	do.
	Francis Grant, Rothiemoor	Draught Filly	do.
	Donald Grant, Lynemore	Blackfaced Tup	do.
West Linton	R. G. Murray, Spittal	Leicester Tup	do.
	A. Clarkson & Sons, Corministon	do. Ewes	do.
	R. G. Murray, Spittal	do. Gimmers	do.
Islay, Jura, and Colonsay	R. & J. Campbell, Kintra	Highland Cow	do.
	Allan M'Dougall, Port Ellen	Ayrshire Cow	do.
	M. M'Millan, Bowmore	Clydesdale Stallion	do.
West Teviotdale	Miss Grieve, Skelfhill	Cheviot Tup	do.
	W. & J. Paterson, Wauchope	do. Ewes	do.
	James Elliot, Burnhead	do. Gimmers	do.
Kincardineshire	Sir J. R. Gladstone of Fasque, Bart.	Aberdeen-Angus Bull	do.
	James Thomson, Balbegno	Shorthorn Bull	do.
	William Fraser, Kilnhill	Clydesdale Mare	do.
Aberdour	Mrs Gordon, Bridgend	Shorthorn Cow	do.
	Henry Arnott, Glaslaw	Clydesdale Mare	do.
	Wm. Chapman, Woodhead	Leicester Sheep	do.
Vale of Alford	Alex. Strachan, Wester Fowlis	Aberdeen-Angus Bull	do.
	George Wilken, Waterside of Forbes	do. Cow	do.
	Mrs Law, New Keig	Shorthorn Bull	do.
		Carry forward	£84 0 0

NAME OF DIST.	PREMIUM AWARDED TO	FOR	AMOUNT.
		Brought forward	£84 0 0
Caithness	Donald Miller, Whitefield	Clydesdale Mare, with Foal at foot	Bronze Medal
	William Moore, Ormlie	Shorthorn Bull	do.
	Geo. Brown, Watten Mains	Leicester Tup	do.
Dalkeith	William Park, Brunstane	Clydesdale Brood Mare	do.
	Alex. Guild, Greenhead	Clydesdale Filly	do.
	Geo. Ferguson, Linton Bank	do.	do.
Black Isle	J. D. Fletcher of Rosehaugh	Aberdeen-Angus Heifer	do.
	J. D. Fletcher of Rosehaugh	Clydesdale Mare	do.
	J. D. Fletcher of Rosehaugh	Leicester Gimmer	do.
Renfrewshire (Lower Ward)	William Clark, Netherlee	Stallion	15 0 0
Lauderdale	David Riddell, Blackhall	Stallion	15 0 0
Kincardineshire	Stonehaven Horse Company	Stallion	15 0 0
Orkney	Orkney Horse-Breeding Society	Stallion	15 0 0
Strathearn	James Kilpatrick, Craigie Mains	Stallion	15 0 0
Mid-Lothian (Western District)	William Hood, Chapelton	Stallion	15 0 0
Stirling	Alexander Scott, Berryyards	Stallion	15 0 0
			£189 0 0
		33 Bronze Medals	7 3 0
			£196 3 0

SPECIAL GRANTS.

Highland Home Industries and Arts Association	Grant	£40 0 0
Ayrshire Agricultural Association	Vote to Dairy Show at Kilmarnock	20 0 0
Shetland Agricultural Society	Vote in aid of Premiums	5 0 0
Orkney Agricultural Society	do. do.	3 0 0
		£68 0 0

MEDALS IN AID OF PREMIUMS GIVEN BY LOCAL SOCIETIES.

Bronze Medals were awarded to the following:—

ABERDEENSHIRE.

NAME OF DIST.	BRONZE MEDAL AWARDED TO	FOR
Auchindoir, Kildrummy, and Towie	John Watt, Drumnahive	Clydesdale Mare
	George Cran, Braemorlich	Aberdeen-Angus Heifer
Cluny, Monymusk, and Midmar	Robert Grant, Pitfichie	Shorthorn Bull
	Nathaniel Ferries, Gight	Clydesdale Mare
Cromar, Upper Dee, and Donside	The Marquis of Huntly, Aboyne Castle	Aberdeen-Angus Cow
	Patrick Strachan, East Town	Clydesdale Filly

ARGYLLSHIRE.

NAME OF DIST.	BRONZE MEDAL AWARDED TO	FOR
Poltalloch	Lord Malcolm of Poltalloch	Highland Bull
	Dugald M'Neill, Dunamuck	Ayrshire Bull

AYRSHIRE.

Dalrymple	James Blair, Holmes	Ayrshire Cow
	Michael Logan, Bargenoch	Clydesdale Mare
Irvine	Hugh Todd, Harperland	Clydesdale Mare
Stewarton	A. R. Foulds of Clerkland	Ayrshire Cow
	Robert M. Reid, Bonshaw	Ayrshire Bull

BERWICKSHIRE.

Berwickshire Bee-keepers	David Porter, Duns	Liquid Honey
	John Laing, Auchencrow	Bell Glass of Honey
Lauderdale Ornithological	Robert Redpath, Cleekhimin	Leghorn Cock and Hen
	Miss Agnes Scott, Boghall	Minorca Hen

CLACKMANNANSHIRE.

Clackmannanshire Union	W. T. Malcolm, Dunmore Home Farm	Shorthorn Bull
	J. J. Moubray of Naemoor	Clydesdale Yeld Mare

DUMFRIESSHIRE.

Sanquhar	James Moffat, Gateside	Ayrshire Cow
	James Wightman, South Mains	Cheviot Sheep
South of Scotland Bee-keepers	James Learmont, Balmaghie Gardens	Honey
	T. & J. Tweedie, Mouswald	Honey

FIFESHIRE.

Western District of Fife	James Whyte, Muirside	Leicester Gimmer
	J. & W. Meiklem, Begg Farm	Clydesdale Mare

HADDINGTONSHIRE.

United East Lothian	St Clair Cunningham, Hedderwick Hill	Clydesdale Gelding
	Right Hon. A. J. Balfour, M.P., Whittinghame	Leicester Tup

INVERNESS-SHIRE.

Glen Urquhart	The Countess Dowager of Seafield, Balmacaan	Sandy Oats
	Donald Fraser, Mid-Drumbuie	Champion Potatoes

KINCARDINESHIRE.

Fettercairn	James Thomson, Balbegno	Shorthorn Bull
	James Smith, Pittengardner	Clydesdale Filly

LANARKSHIRE.

Carmichael	Robert Weir, Watchknowe	Leicester Ewe
	James R. Core, Swaites	Bantam Hen

STIRLINGSHIRE.

Slamannan	Ebenezer Forrester, Dyke	Ayrshire Cow
	William Taylor, Coxhill	Clydesdale Mare

35 Bronze Medals, £7, 11s. 8d.

PLOUGHING COMPETITIONS.

In 1895-96 the Society's Silver Medal was awarded at 203 Ploughing Competitions.

203 Minor Silver Medals, £53, 6s. 2d.

III.—COTTAGES AND GARDENS.

34 Minor Silver Medals £8 4 4

IV.—VETERINARY DEPARTMENT.

CLASS EXAMINATIONS—1896.

Silver Medals were awarded to the following:—

ROYAL (DICK) VETERINARY COLLEGE.

E. Little	Chemistry	H. W. Robson	Cattle Pathology and Obstetrics
W. Tart	Senior Anatomy	S. E. Morton	Veterinary Medicine
E. Brown	Physiology	T. Fleming	Botany
H. Lomas	Materia Medica	W. Girvan	Zoology
H. Lomas	Pathology		
S. E. Morton	Surgery		

NEW VETERINARY COLLEGE.

James Kenyon	Pathology of the Horse	G. J. Roberts	Physiology
		W. L. Gascoyne	Chemistry
M. E. Williams	Pathology of the Ox, Sheep, Pig, & Dog	W. L. Gascoyne	Junior Anatomy
		W. L. Gascoyne	Botany
W. L. Cockburn	Materia Medica	W. L. Gascoyne	Zoology
G. J. Roberts	Senior Anatomy		

GLASGOW VETERINARY COLLEGE.

James Donaldson	Materia Medica (Written)	John R. M'Call	Veterinary Hygiene and Dietetics
John M'Neil	Pathology and Bacteriology	C. W. Mackay	Senior Anatomy
		Charles Bell	Junior Anatomy
John M'Neil	Medicine & Surgery (Horse)	W. Watson	Chemistry
		W. Watson	Botany
John M'Neil	Medicine & Surgery (Cattle)	W. Watson	Zoology
		H. Oliver	Physiology
John M'Neil	Parasitology		

31 Large Silver Medals, £19, 19s.

V.—AGRICULTURAL CLASS, EDINBURGH UNIVERSITY.

A. Allsebrook, Wollaton, Nottingham	£2 10 0
D. Chalmers, Gillespie, Glenluce	2 10 0
J. Rushton, Rush Hall Farm, Hilderstone, Stone, Staffs	2 10 0
W. Mason, Marsh Grange, Kirby-in-For, Lancashire	2 10 0
	£10 0 0

ABSTRACT OF PREMIUMS.

1. Perth Show				£1933	5	2
2. District Shows:—						
Stock	£196	3	0			
Special Grants	68	0	0			
Local Societies—35 Medals	7	11	8			
Ploughing Competitions—203 Medals	53	6	2			
				325	0	10
3. Cottages and Gardens—34 Minor Silver Medals				8	4	4
4. Veterinary Department—Medals to Students				19	19	0
5. Agricultural Class, Edinburgh University				10	0	0
				£2296	9	4

STATE OF THE FUNDS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

As at 30th NOVEMBER 1896.

I.	HERITABLE BONDS—						
	£11,000 at 3¾ per cent, £767, 6s. 6d. at 3½ per cent, £15,500 at 3¼ per cent, £6000 at 3 per cent . . .				£33,267	6	6
II.	DEBENTURE STOCKS—						
	£4,250 North British Railway Company 3 per cent, at £114⅜	£4,860	18	9			
	£2,727 Caledonian Railway Company 4 per cent, at £155	4,226	17	0			
	£1,334 London and North-Western Railway Company 3 per cent, at £119½ . .	1,594	2	8			
					10,681	18	5
III.	BANK STOCKS—						
	£6,407 7 8 Royal Bank of Scotland, at £227 . . .	£14,544	15	2			
	2,218 16 5 Bank of England, at £328½ .	7,288	16	6			
	2,500 0 0 British Linen Company Bank, at £432 . . .	10,800	0	0			
	1,741 13 4 Bank of Scotland, at £349 .	6,078	8	4			
	£12,867 17 5				38,712	0	0
IV.	ESTIMATED VALUE of Building, No. 3 George IV. Bridge .				3,100	0	0
V.	ESTIMATED VALUE of Furniture, Paintings, Books, &c. . .				1,000	0	0
VI.	ARREARS OF MEMBERS' SUBSCRIPTIONS considered recoverable				115	2	0
VII.	BALANCE DUE BY ROYAL BANK OF SCOTLAND ON ACCOUNTS CURRENT, at 30th November 1896				1,438	1	7
	AMOUNT OF GENERAL FUNDS . .				£88,314	8	6
VIII.	TWEEDDALE MEDAL FUND—						
	Heritable Bond, at 3½ per cent				£500	0	0

JAS. H. GIBSON-CRAIG, *Treasurer.*
GEORGE R. GLENDINNING, *Member of Finance Committee.*
WM. HOME COOK, C.A., *Auditor.*

EDINBURGH, 30*th December* 1896.

VIEW OF RECEIPTS AND PAYMENTS
For the Year 1895-96.

RECEIPTS.

1.	ANNUAL SUBSCRIPTIONS AND ARREARS received		£929 3 6
2.	LIFE SUBSCRIPTIONS		947 11 0
			£1,876 14 6
3.	INTERESTS AND DIVIDENDS received—		
	Interests	£1,255 15 5	
	Dividends	1,310 3 6	
			2,565 18 11
4.	TRANSACTIONS		68 16 2
5.	SUM received from Government in aid of Expenses of Agricultural Experiments		100 0 0
6.	RECEIPTS from Perth Show		8,250 8 2
7.	RECEIPT in connection with Dumfries Show		2 0 0
8.	MISCELLANEOUS RECEIPT		0 18 3
	SUM OF RECEIPTS		£12,864 16 0

PAYMENTS.

1.	ESTABLISHMENT—			
	Salaries and Wages		£1,099 10 0	
	Feu-duty, Taxes, Coals, Gas, Insurances, Repairs, and Furnishings		178 4 3	
			£1,277 14 3	
2.	FEE TO AUDITOR of Accounts for 1894-95		50 0 0	
3.	FEE TO PRACTICAL ENGINEER		20 0 0	
4.	EDUCATION (including Special Grants)		162 13 0	
5.	CHEMICAL DEPARTMENT		288 5 3	
6.	VETERINARY DEPARTMENT		44 2 0	
7.	BOTANICAL DEPARTMENT		25 0 0	
8.	TRANSACTIONS		545 14 7	
9.	ORDINARY Printing, Advertising, Stationery, Postages, and Bank Charges		216 11 11	
10.	SUBSCRIPTIONS to Public Societies		25 0 0	
11.	MISCELLANEOUS		110 10 11	
12.	PAYMENTS in connection with former Shows		217 18 8	
13.	PAYMENTS in connection with Perth Show—			
	Premiums	£1,677 15 2		
	General Expenses, as per Abstract (p. 453)	3,805 7 0		
			5,483 2 2	
14.	PREMIUMS for District Competitions		347 0 2	
15.	PREMIUMS for Cottages and Gardens		18 17 4	
	SUM OF PAYMENTS			8,832 10 3
	BALANCE OF RECEIPTS			£4,032 5 9

JAS. H. GIBSON-CRAIG, *Treasurer.*
GEORGE R. GLENDINNING, *Member of Finance Committee.*
WM. HOME COOK, C.A., *Auditor.*

EDINBURGH, 30*th December* 1896.

ABSTRACT of the ACCOUNTS of the HIGHLAND and

CHARGE.

1. **Balance** due by Royal Bank of Scotland on Accounts Current at 30th November 1895				£1,523 2 4
2. **Arrears** of Subscriptions outstanding at 30th Nov. 1895			£106 12 0	
Whereof due by Members who have compounded for life, and are thereby extinguished . .		£8 17 0		
Sums ordered to be written off .		48 2 6		
			56 19 6	
				49 12 6
3. **Interests and Dividends**—				
(1) Interest on Heritable Bonds, less Income-tax			£976 18 9	
(2) Interest on Debenture Stocks, do.			267 7 6	
(3) Interest on Deposit Receipts . . .			11 9 2	
			£1,255 15 5	
(4) Dividends on Bank Stocks—				
Royal Bank of Scotland .	£6,407 7 8	£512 11 8		
Bank of England	2,218 16 5	188 11 10		
British Linen Co. Bank . .	2,500 0 0	400 0 0		
Bank of Scotland . .	1,741 13 4	209 0 0		
	£12,867 17 5		1,310 3 6	2,565 18 11
4. **Subscriptions**—				
Annual Subscriptions			£1,039 15 6	
Life Subscriptions			947 11 0	
				1,987 6 6
5. **Transactions**—Sales, £25, 18s. 8d.; Advertisements, £42, 17s. 6d.				68 16 2
6. **Sum** received from Government in aid of Expenses of Agricultural Experiments				100 0 0
7. **Receipts** from Perth Show				8,250 8 2
8. **Receipt** in connection with Dumfries Show				2 0 0
9. **Miscellaneous Receipt**				0 18 3
Sum of Charge . .				£14,548 2 10

Edinburgh, 30*th December* 1896.

AGRICULTURAL SOCIETY of SCOTLAND for the Year 1895-96.

DISCHARGE.

1. Establishment Expenses—			
Salaries and Wages			£1,009 10 0
Feu-duty, £28 ; Taxes, £39, 14s. 4d.			67 14 4
Coals and Gas, £22, 11s. 10d.; Insurances, £16, 14s. 8d.			39 6 6
Repairs and Furnishings			71 3 5
			£1,277 14 3
2. Fee to Auditor of Accounts for year 1894-95			50 0 0
3. Fee to Practical Engineer for year to 30th June 1896			20 0 0
4. Education—			
(1) Special Grants—			
Vote to Scottish Dairy Institute		£60 0 0	
Vote to Forestry Chair in Edinburgh University		50 0 0	
		£110 0 0	
(2) Prizes to Class in Edinburgh University		7 10 0	
(3) Fees to Examiners, Travelling Expenses, and Luncheons		45 3 0	
			162 13 0
5. Chemical Department—			
(1) Salary to Chemist		£50 0 0	
(2) Chemists' Fees and Expenses—			
Fees for Analyses for Members	£107 10 0		
Fees and Expenses in connection with Experiments	34 9 0		
		141 19 0	
(3) Expenses of Experiments		93 13 3	
(4) Printing		3 13 0	
			288 5 3
6. Veterinary Department—Fee to Professor Williams, £26, 5s. ; Medals to Students, £17, 17s.			44 2 0
7. Botanical Department—Fee to Botanist for year			25 0 0
8. Transactions—Printing, Binding, Postage, Literary Contributions, Reports, &c.			545 14 7
9. Ordinary Printing and Lithographing, £70, 17s. 4d.; Advertising, £10, 11s. 9d.; Stationery, Books, and Binding, £60, 10s. 7d.; Postage and Receipt Stamps, £67 ; Bank and Post-Office Charges and Telegrams, £7, 12s. 3d.			216 11 11
10. Subscriptions to Public Societies—Scottish Meteorological Society, £20 ; Society for Prevention of Cruelty to Animals, £5			25 0 0
11. Miscellaneous Expenses—Secretary's Expenses attending Nominations of Directors, £21, 7s.; Do. attending Shows, £14, 15s. 6d.; Reporting Board Meetings, £21 ; Tods, Murray, & Jamieson, W.S., Business Account, £32, 6s. 11d.; Luncheons to Directors, £17, 10s.; Handsels, £1, 10s.; Telegraphic Address, £1, 1s. ; Restriking Medals, &c., £1, 0s. 6d.			110 10 11
12. Payments in connection with former Shows—Aberdeen Expenses, 4s.; Dumfries—Premiums, £217, 10s.; Expenses, 4s. 8d.			217 18 8
13. Payments in connection with Perth Show—Premiums, £1,677, 15s. 2d.; General Expenses, £3,805, 7s.			5,483 2 2
14. Premiums for District Competitions			347 0 2
15. Premiums for Cottages and Gardens			18 17 4
16. Investments made—£9,300 ; less realised, £5,182, 13s. 6d.			4,117 6 6
17. Arrears struck off as irrecoverable			45 2 6
18. Arrears outstanding at 30th November 1896			115 2 0
19. Balance due by Royal Bank on Accounts Current at 30th November 1896			1,438 1 7
Sum of Discharge			£14,548 2 10

JAS. H. GIBSON-CRAIG, *Treasurer.*
GEORGE R. GLENDINNING, *Member of Finance Committee.*
WM. HOME COOK, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS

CHARGE.

1. LOCAL SUBSCRIPTIONS—						
Voluntary Assessment, Perthshire Eastern Division				£598	0	2
" " " Western Division				256	0	6
" " Fifeshire				263	0	0
" " Kinross-shire				27	5	11
Private Subscription				10	0	0
				£1,154	6	7
2. AMOUNT COLLECTED DURING SHOW—						
Drawn at Gates	£3,917	1	6			
Drawn at Grand Stand	568	18	6			
Catalogues and Awards sold	290	2	7			
Attendants Tickets sold	10	0	0			
Lavatory and Ladies' Cloak-Room	2	7	1			
				4,788	9	8
3. FORAGE AND MANURE SOLD				18	12	5
4. RENT OF STALLS				1,650	3	0
5. RENT OF REFRESHMENT BOOTHS				200	0	0
6. FINES FOR NON-EXHIBITION OF LIVE-STOCK				42	9	0
7. INCOME FROM TWEEDDALE MEDAL FUND				17	10	5
8. ADVERTISING IN CATALOGUE AND PREMIUM LIST				147	10	3
9. SPECIAL PRIZES CONTRIBUTED				172	15	0
10. HORSELESS CARRIAGES—CONTRIBUTION TOWARDS EXPENSES				9	12	1
11. TRIAL OF CORN-DRESSERS AND EXHIBITION OF BINDERS				25	10	6
12. EDINBURGH AGRICULTURAL ASSOCIATION — LOAN OF HORSE-SHOEING PLANT				5	0	0
13. INTEREST FROM ROYAL BANK				18	9	3
				£8,250	8	2

Note.—From the above balance of	£2,767	6	0
There has to be deducted the premiums undrawn at 30th November 1896, amounting to	255	10	0
Making the probable Surplus	£2,511	16	0

EDINBURGH, 30*th December* 1896.

of the PERTH SHOW, 1896.

DISCHARGE.

		£	s.	d.	£	s.	d.
1.	SHOWYARD EXPENDITURE—						
	Fitting up Showyard				£2,325	13	4
	Rosettes				19	2	0
	Ambulance Appliances				12	16	0
	Miscellaneous				5	12	11
					£2,363	4	3
2.	FORAGE				282	18	0
3.	POLICE				44	12	2
4.	TRAVELLING EXPENSES of Judges, Stewards, &c.				101	18	10
5.	HOTEL AND LUNCHEONS—						
	Hotel Bill for 30 Directors, 7 Stewards, 27 Judges, Auditor, Veterinary Inspector, Engineer, Secretary, &c.	£216	12	6			
	Luncheons in Showyard for Judges, Directors, Attending Members, and Members of Committee, and Breakfasts for Stewards, Assistants, &c.	87	1	9			
					303	14	3
6.	MUSIC				31	11	0
7.	PRINTING				267	12	6
8.	ADVERTISING and Bill-posting				97	16	0
9.	HORSE-SHOEING COMPETITION				15	0	5
10.	HIGHLAND INDUSTRIES				5	16	0
11.	VETERINARY INSPECTION				5	0	0
12.	PRACTICAL ENGINEER				35	7	6
13.	TRIAL OF CORN-DRESSERS and Exhibition of Binders				49	7	10
14.	EXHIBITION OF HORSELESS CARRIAGES				13	8	1
15.	ASSISTANTS and Attendants				129	18	6
16.	POSTAGES				49	0	0
17.	MISCELLANEOUS				9	1	8
	AMOUNT OF GENERAL EXPENSES				£3,805	7	0
18.	PREMIUMS drawn at 30th November 1896				1,677	15	2
					£5,483	2	2
	BALANCE OF RECEIPTS				2,767	6	0
					£8,250	8	2

JAS. H. GIBSON-CRAIG, *Treasurer.*
GEORGE R. GLENDINNING, *Member of Finance Committee.*
WM. HOME COOK, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS of the ARGYLL NAVAL FUND for 1895-96.

CHARGE.

1. Funds as at 30th November 1895—		
£3,193, 6s. 8d. 3 per cent Debenture Stock of the North British Railway Company, purchased at		£2,650 0 0
£3,000 Funded Debt of the Clyde Navigation Trustees, purchased at		2,970 0 0
£405 Royal Bank of Scotland Stock, purchased at		893 14 6
		£6,513 14 6
Balance on Account Current with Royal Bank of Scotland		200 5 8
		£6,714 0 2
2. Income—		
Interest on Investments—		
On £3,193, 6s. 8d. 3 per cent Debenture Stock of the North British Railway Company, £95, 16s., tax £3, 3s. 10d.	£92 12 2	
On £3,000 Funded Debt of the Clyde Navigation Trustees at 4 per cent, £120, tax £4	116 0 0	
On £405 Royal Bank of Scotland Stock	32 8 0	
		241 0 2
Sum of Charge		£6,955 0 4

DISCHARGE.

1. Allowance to the five following Recipients—		
Edward Leonard Grieve (second year)		£40 0 0
Percy L. H. Noble (second year)		40 0 0
Colin Kenneth Maclean (third year)		40 0 0
Leslie Menzies (third year)		40 0 0
John Allan Gregory (fourth year)		40 0 0
		£200 0 0
2. Funds as at 30th November 1896—		
£3,193, 6s. 8d. 3 per cent Debenture Stock of the North British Railway Company, purchased at	£2,650 0 0	
£3,000 Funded Debt of the Clyde Navigation Trustees, purchased at	2,970 0 0	
£405 Royal Bank of Scotland Stock, purchased at	893 14 6	
	£6,513 14 6	
Balance on Account Current with Royal Bank of Scotland	241 5 10	
		6,755 0 4
Sum of Discharge		£6,955 0 4

JAS. H. GIBSON-CRAIG, *Treasurer.*
GEORGE R. GLENDINNING, *Member of Finance Committee.*
WM. HOME COOK, C.A., *Auditor.*

EDINBURGH, 30*th December* 1896.

PROCEEDINGS AT BOARD MEETINGS.

MEETING OF DIRECTORS, 5TH FEBRUARY 1896.

Present.—Vice-Presidents—Sir Robert Menzies of Menzies, Bart.; Mr Jon. Middleton, Clay of Allan. *Ordinary Directors*—Mr Speir, Newton Farm; Mr Dun, Easter Kincaple; Mr Davidson, Saughton Mains; Mr Lumsden of Balmedie; Mr Macpherson-Grant, Kingussie; Mr Scott Dudgeon, Longnewton; Mr Cross of Knockdon; Mr Malcolm, Dunmore Home Farm; Captain R. Dundas, yr. of Arniston; Mr Lockhart, Mains of Airies; the Hon. the Master of Polwarth, Humbie House; Mr M'Gibbon, Ardnacraig; Mr Hutcheson, Beechwood; Mr Martin of Auchendennan; Mr Hope, Eastbarns; Mr Gordon of Newton; Mr Maxwell of Kirkennan; Mr Wilson, Chapelhill; Mr Howatson of Glenbuck; Mr Paterson, Hill of Drip; Sir James H. Gibson-Craig of Riccarton, Bart.; Mr Marr, Cairnbrogie; Mr Cran, Kirkton; Mr C. H. Scott Plummer of Sunderland Hall. *Extraordinary Directors*—Mr John A. Dewar, Lord Provost of Perth; Sir R. D. Moncreiffe of Moncreiffe, Bart.; Mr Macduff of Bonhard; Mr Ballingall, Dunbog; Mr Buttar, Corston; Mr Wilson, yr. of Carbeth; Mr Elliot, Hollybush; Mr Ferguson, Pictstonhill; Mr Glendinning, Hatton Mains; Mr W. J. Maxwell, yr. of Munches; Mr R. Shirra Gibb, Boon. *Chemist*—Dr A. P. Aitken. *Engineer*—Mr James D. Park.

The SECRETARY reported apologies for the absence of the Marquis of Breadalbane, K.G.; Lord Balvaird, Scone Palace; Sir G. Graham Montgomery of Stanhope, Bart.; Sir Ralph Anstruther of Balcaskie, Bart.; Sir Alex. Muir Mackenzie of Delvine, Bart.; Colonel Home Drummond of Blair Drummond; Mr Dudgeon of Cargen; Mr Duthie, Tarves; Mr Gilmour of Montrave; Mr Ralston, Glamis; Mr Sinclair Scott, Burnside; Mr Walker, Portlethen.

Before proceeding to the regular business, the CHAIRMAN said he would like to make an explanation regarding a remark made at last meeting, and which seemed to have been taken up wrongly by nearly every member of the press present. He had intimated that the City of Glasgow had given £250 to the Society, which was the largest sum ever received. In answer to a question as to what was the next largest, he had said £200, given by Glasgow on a former occasion, and the same sum by Edinburgh. This had been reported in various ways.

Mr MACDUFF, Bonhard, had also an explanation to make regarding the motion by a gentleman at the last general meeting, that he (Mr Macduff) should retire from the list of Extraordinary Directors in favour of another gentleman who was better situated geographically. He had had a letter from the mover of this motion saying that his reason for suggesting that he (Mr Macduff) should retire was not because he was the weakest and least worthy of the place, but because he (Mr Macduff) happened to be in the direct line of sight between himself and the noble chairman.

ELECTION OF CHAIRMAN.

The CHAIRMAN remarked that the next business was to elect a Chairman of the Board of Directors for the current year. He had now held that most honourable post for two years, and in one word would thank them sincerely for the uniform cordiality and kindness with which they had treated him during that time. He had always tried to do his duty towards the Society.

Mr **Gordon**, Newton, said that at the Committee meeting which had just been held they agreed unanimously on the name of the gentleman whom they thought best fitted, both physically and mentally, to fill the chair. He alluded to his friend the minister of Mouswald. He ventured to say that there was no man in all broad Scotland who had laboured harder in the interests of agriculture and the Highland Society generally than the Rev. John Gillespie. He thought the least they might do was to ask him to accept the honour at their hands of the post of Chairman to the Board of Directors.

Mr **David Wilson**, yr. of Carbeth, seconded the motion, which was unanimously agreed to.

Rev. Mr **Gillespie**, in taking the chair, said he had only, in a word, to assure them that no one could appreciate the honour they had conferred on him more than he did. During all the time he had had the honour of having a seat on the Board he had done his humble best to promote the interests of the Society and of agriculture generally. He felt the responsibility of the position, but he could depend upon their cordial co-operation and assistance, and he had also the satisfaction of knowing that they had a most able Secretary who would assist in keeping him posted up.

Mr J. M. **Martin** of Auchendennan said he thought he was the oldest colleague of their old Chairman, and the motion he rose to propose was a very cordial and hearty vote of thanks from the Board to Sir James Gibson-Craig for the very able and zealous way in which he had carried out the duties of Chairman during the last two years. The position of Chairman was, two years ago, a new and, to a certain extent, an experimental one, but he was sure he was giving voice to the feelings of that meeting when he expressed his appreciation of the courtesy Sir James had extended to all the members of the Board during that time.

Sir **James Gibson-Craig** briefly acknowledged the vote of thanks.

Election of Committees.

The various Standing Committees for 1896 were then elected. A motion was made by Sir **Robert Menzies** that a separate Forestry Committee be appointed. He spoke at some length to his motion, emphasising the necessity for such an arrangement.

The **Chairman** said there was a slight difficulty in the passing of this motion, as it would entail a suspension of the Standing Orders. It would, he was afraid, be necessary first to move a suspension.

Sir **Robert Menzies** accordingly moved the suspension of the Standing Orders, but his motion, on being put to the vote, was defeated. He gave notice of his motion for next meeting.

Perth Show—Special Prizes.

An offer by the Marquis of Breadalbane, President of the Society, of champion bronze medals for best animal in the various sections was accepted with thanks.

A special prize of £10 from the Shorthorn Dairy Prize Fund, per Mr Richard Stratton, was offered for the Shorthorn cow or heifer in milk showing the best dairy qualities, on condition that the Society give a second prize of £5. The animals competing would require to be entered, or eligible for entry, in the Shorthorn Herd-Book; and the object of the prize was to promote the production of good dairy cows, combining good milking properties with robustness of constitution. Considerable discussion ensued, and Mr W. **Elliot** ultimately moved that the prize be accepted on the conditions mentioned, and Mr **Malcolm**, Dunmore Home Farm, seconded. An amendment by Mr **Lockhart**, that the prize be accepted only on condition that no second prize be given by the Society, was not seconded, and Mr Elliot's motion was declared carried.

Mr W. S. **Ferguson**, Pictstonhill, thereupon offered a similar prize on the same conditions for Aberdeen-Angus cattle; and this was also agreed to, the thanks of the meeting being conveyed to Mr Ferguson for his generosity.

An offer of £10 and £5 by Mr **Smith** of Ardtornish, as special prizes for groups of West Highland cattle, was also accepted.

Two silver medals for Suffolk sheep were offered by the Suffolk Sheep Society, and the Secretary was instructed to accept same, provided they were in accordance with the rule which stipulates that all such must be of the value of £10.

Evening Opening of Show.

A recommendation by Lord Provost **Dewar**, that the Show be kept open on one evening till 8 p.m., was submitted. The Lord Provost said that although the recommendation was in his name, it was also the unanimous recommendation of the Town Council at a meeting during which the greatest enthusiasm prevailed as to the visit of the Show to Perth; and besides asking them to keep the Show open, they had also recommended that a half-holiday be held on that day, and also to join with the Society in endeavouring to provide cheap fares on all days of the Show, instead of on one as formerly. He suggested that a horse parade be held as an inducement to the public to attend.

It was agreed, after discussion, that the recommendations be carried out, and that the Show be open till nine on Thursday evening. No horse parade could, however, be arranged.

PARADES, ETC.

It was remitted to the stewards to fix as to hours of parades, charge for admission to grand stands, &c.

The regulations as to trials of corn binders was remitted to the implement stewards, and the judges were appointed.

Regulations regarding exhibition of binders at work were remitted to the implement stewards and a committee.

It was also agreed that the shoeing competitions be open to the counties of Fife, Clackmannan, and Kinross.

MEETING OF DIRECTORS, 4TH MARCH 1896.

Present. — *Vice-Presidents* — Right Hon. Lord Balvaird; Sir Robert Menzies of Menzies, Bart.; Mr Middleton, Clay of Allan. *Ordinary Directors*—Mr Speir, Newton Farm; Mr Davidson, Saughton Mains; Mr Dudgeon of Cargen; Mr Macpherson Grant, Kingussie; Mr Scott Dudgeon, Longnewton; Mr Cross of Knockdon; Mr Malcolm, Dunmore Home Farm; Mr Hutcheson, Beechwood; Mr Hope, Eastbarns; Mr Wilson, Chapelhill; Mr Howatson of Glenbuck; Sir Ralph Anstruther of Balcaskie, Bart.; Mr Paterson, Hill of Drip; Sir James H. Gibson-Craig of Riccarton, Bart.; Rev. John Gillespie, Mouswald; Mr Cran, Kirkton; Mr Scott Plummer of Sunderland Hall. *Extraordinary Directors* — Mr Ballingall, Dunbog; Mr Buttar, Corston; Mr Wilson, yr. of Carbeth; Mr Elliot, Hollybush; Mr Ferguson, Pictstonhill; Mr Maxwell, yr. of Munches; Mr Shirra Gibb, Boon. *Chemist*—Dr A. P. Aitken. *Auditor*—Mr W. Home Cook, C.A. *Engineer*—Mr J. D. Park. Rev. John Gillespie in the chair.

The SECRETARY reported apologies for the absence of the Marquis of Breadalbane, K.G.; the Hon. the Master of Polwarth; Sir G. Graham Montgomery, Bart.; Sir Robert D. Moncreiffe, Bart.; Mr Cameron, Balnakyle; Mr Dun, Easter Kincaple; Mr Duthie, Tarves; Mr Gilmour of Montrave; Mr Glendinning, Hatton Mains; Mr Gordon of Newton; Mr Lumsden of Balmedie; Mr Macduff of Bonhard; Mr M'Gibbon, Ardnacraig; Mr Martin of Auchendennan; Mr Ralston, Glamis; Mr Sinclair Scott, Burnside; Mr Walker, Portlethen.

Mr ANDREW HUTCHESON, Beechwood, gave notice of the following motion at next meeting: "That in the opinion of this Society the present conduct of the cattle trade —namely, the importation of the finished article and the embargo on the raw material —is a state of matters under which no trade can flourish, and that the only remedy now open to give the home feeder and breeder fair play is to make the foreign cattle trade a wholly dead meat one."

PERTH SHOW, 1896—SPECIAL PRIZES, ETC.

The SECRETARY intimated an offer of £10 by Scotch breeders of Shropshire sheep, per Mr David Buttar, to be given in prizes of £5, £3, and £2, for pens of cross-bred lambs, in class 91, got by Shropshire tups. The offer was accepted.

The minutes of meeting of stewards with reference to parades, &c., were approved of, and arrangements as to catering were completed.

GLASGOW SHOW, 1897.

A letter from the Town Clerk of Glasgow with reference to the conditions of site for next year's Show on Glasgow Green was submitted, and the Secretary was instructed to accept the conditions.

GOVERNMENT GRANT.

The **SECRETARY** submitted a letter from the Board of Agriculture, with Government grant of £100 in aid of the Society's expenditure in agricultural research for year ending 31st March 1896. It was pointed out to the meeting that this sum was £50 less than that received last year, the Chairman remarking that the decrease was probably due to the fact that they had been doing less in that department. The grant was accepted.

OFFICE OF TREASURER.

A letter was read from Sir William Stuart Walker, K.C.B., resigning the office of Treasurer, as he felt himself no longer able to perform the duties.

The **CHAIRMAN** said there was no alternative but to accept the resignation which was placed in their hands. They all knew that when a younger and more active man, Sir William Stuart Walker was very devoted to the interests of the Society, and they were much indebted to him for all he had done. He would suggest that they place on their minutes a record of their appreciation of the valuable services which he had rendered.

This was unanimously agreed to. The office thus rendered vacant will be filled up at the general meeting in June.

FORESTRY COMMITTEE.

A motion by Sir **ROBERT MENZIES**, "That a separate Committee be appointed, and the Standing Orders altered accordingly," was adopted. The following gentlemen, nominated by Sir Robert, were appointed to form the Committee, viz.: Lord Stair; Mr Gilmour of Montrave; Mr Gordon of Newton; the Master of Polwarth; Mr John Methven, Edinburgh; Colonel Bailey, Edinburgh; Mr Keir, Ladywell; Mr Dun, Taymouth; Mr Michie, Balmoral; Mr Pitcaithley, Scone; and Sir Robert Menzies (Convener).

PROPOSED BILL FOR AGRICULTURAL RELIEF.

Sir **JAMES GIBSON-CRAIG** said that from the forecast they had seen in the papers of Mr Chaplin's proposed bill, founded on the interim report of the majority of the Agricultural Commissioners, there was to be very substantial relief given on agricultural rating in England. It was limited to England, and they proposed as a sop to Scotland that a grant in aid should be given to Scotland. He did not think that was the way this country ought to be treated. Any bill for granting relief should deal with England and Scotland on the same footing. As they knew, a grant could be withdrawn any year, and he thought they ought to urge in every way they could that Scotch agriculturists be put on the same footing as those in England. The matter had been before the General Purposes Committee, and he moved that a special Committee be appointed to look after the interests of Scotch agriculturists in London. The Committee which had been proposed was composed of members of the Board who were likely to be in London, and is as follows: The Marquis of Breadalbane, Lord Balvaird, Colonel H. S. Home Drummond, Captain Robert Dundas, Sir Ralph Anstruther, Sir James Gibson-Graig, Sir C. E. Adam, Lord Reay, Sir G. Graham Montgomery; Messrs James I. Davidson, James Hope, John Gilmour, and W. J. Maxwell.

The **CHAIRMAN** suggested that they should make a representation to the Government, informing them that they wished to carry out such a representation, and that if they (the Government) proposed any such thing they protested against it. The Committee would follow that up.

Sir **JAMES GIBSON-CRAIG** agreed with this suggestion, and Sir **RALPH ANSTRUTHER** thereupon seconded the motion.

Mr **JOHN WILSON** said he protested emphatically against the proposed treatment of Scotland. He thought he was not mistaken when he said that a question was put in the House of Commons with regard to the matter of agricultural rating, when it was answered by a responsible member of the Government that in any bill for the relief of agriculture Scotland would certainly be included. It seemed now, however, that they were to be excluded instead of included. He held that any legislation ought to make it compulsory that agricultural land should be rated at a lower rate than other property.

After some further discussion the motion was passed.

CIRCUIT OF SHOWS.

The minute of the Committee meeting held earlier in the day was submitted. The Committee recommended that, provided satisfactory financial and other arrangements could be made, the Show of 1898 be held in the Border district. The Directors agreed that the recommendation be adopted, as soon as they were satisfied that the amount of financial support would be sufficient to enable the Society to hold it in that district. With reference to the memorials from the Morayshire Farmers' Club in favour of Elgin as a centre for the Show, the Committee could not see its way to the formation of a separate show district, with Elgin as its centre. The matter should, however, receive careful consideration when the next visit to the North was being made. The minutes were approved of.

AGRICULTURAL EDUCATION.

The SECRETARY intimated that it had been reported to him that steps were being taken in Aberdeen, Glasgow, and other centres to organise a deputation to the Secretary for Scotland, urging increased Government grants for the purposes of agricultural education. The following gentlemen were appointed representatives of the Society to join the deputation: Sir Ralph Anstruther, Captain Dundas, Master of Polwarth; Messrs Andrew Hutcheson, G. R. Glendinning, and Charles Howatson.

MEETING OF DIRECTORS, 1ST APRIL 1896.

Present.—Vice-Presidents—Sir Robert Menzies of Menzies, Bart.; Mr Middleton, Clay of Allan. *Ordinary Directors*—Mr Speir, Newton Farm; Mr Dun, Easter Kincaple; Mr R. F. Dudgeon of Cargen; Mr Scott Dudgeon, Longnewton; Mr Cross of Knockdon; Mr Malcolm, Dunmore Home Farm; Captain Robert Dundas, yr. of Arniston; Mr Cameron, Balnakyle; the Hon. the Master of Polwarth, Humbie House; Mr Hutcheson, Beechwood; Mr Martin of Auchendennan; Mr Hope, Eastbarns; Mr Gordon of Newton; Mr Maxwell of Kirkennan; Mr Wilson, Chapelhill; Mr Howatson of Glenbuck; Sir Ralph Anstruther of Balcaskie, Bart.; Mr Paterson, Hill of Drip; Sir James H. Gibson-Craig of Riccarton, Bart.; Rev. John Gillespie, Mouswald; Mr Cran, Kirkton. *Extraordinary Directors*—Sir Robert D. Moncreiffe, Bart.; Mr Buttar, Corston; Mr Wilson, yr. of Carbeth; Mr Elliot, Hollybush; Mr Ferguson, Pictstonhill; Mr Glendinning, Hatton Mains; Mr Sinclair Scott, Burnside; Mr Shirra Gibb, Boon. *Engineer*—Mr J. D. Park. Rev. John Gillespie, Mouswald, in the chair.

The SECRETARY reported apologies from the Right Hon. Lord Balvaird, Scone Palace; Colonel Home Drummond of Blair Drummond; Mr Davidson, Saughton Mains; Mr Gilmour of Montrave; Mr James Auldjo Jamieson, W.S.; Mr Macduff of Bonhard; Mr M'Gibbon, Ardnacraig; Mr Maxwell, yr. of Munches; Mr Walker, Portlethen; Dr A. P. Aitken.

The minutes of the last meeting were adopted. A letter was read from Lord Balfour of Burleigh, Secretary for Scotland, relative to the Government proposals on local rating, and the resolution passed at the last meeting of the Board on that subject. His Lordship said that when the proposals were seen the Directors would have some difficulty in making out that Scotland had been unfairly treated. The annual general meeting was appointed to be held on Wednesday, 17th June.

PERTH SHOW.

The names of the Perth Local Committee were submitted by the Secretary, and the list was held as read.

Thistle Mechanical Milking-Machine.—A communication was read from the manager of the Thistle Co. (Limited) setting forth that it took a deal of money to run their exhibit, which would form an exceptionally attractive feature of the show-yard, but that if the Directors would provide steam-power and cows, the company would be glad to exhibit the machine at Perth.

Mr SPEIR thought it would be altogether out of place to help any exhibitor in this way. No exhibit, he admitted, would be more popular, but they would form a bad precedent, and might find themselves in a difficulty in future by acceding to the request.

Mr CROSS moved that the Society should give the company power.

Mr SPEIR adopted this suggestion. The charge was too heavy for any company to bear. He moved that they give them power and free space.

Mr CROSS seconded this motion.

Mr **David Wilson** moved the previous question.

Mr **Jon. Middleton** seconded.

Mr **Martin** asked if it was not the case that proprietors of engines would be very glad to work a machine of this kind free.

The **Chairman** said they should see that the interests of the public were guarded if any exception was made in favour of this exhibit. At Dumfries comparatively few people were able to see the milking-machine at work. Unless they guarded against this, the exhibit would simply be a failure.

The **Master of Polwarth** moved that free space be given.

Sir **Ralph Anstruther** seconded.

Mr Speir's motion having been withdrawn, a vote was taken between Mr Wilson's and that of the Master of Polwarth. The free space was granted by 15 votes to 10.

Horseless Carriages.—Mr Speir had the following motion on the agenda: "That this Society should, at their Show at Perth, offer facilities and give inducements for the exhibition of horseless carriages for heavy traffic." He said the Society had already made arrangements for an exhibition of horseless carriages for purposes of pleasure, but if farmers were to get any advantage from this new motor, it must be in the direction of the transmission of heavy traffic.

The **Master of Polwarth** thought heavy carriages were included in the original remit, but if it were not so he seconded the motion.

After some further conversation the motion was withdrawn, and the Committee instructed to put carriages for heavy traffic on the same footing as those for passenger traffic.

MILKING-MACHINES.

The **Chairman** moved "That it be remitted to a Committee to consider and report as to the advisability of having a competitive trial of Milking-machines at the Glasgow Show, 1897."

The motion was unanimously agreed to, and the following Committee appointed: Messrs Cross, Speir, Gibb, David Wilson, Andrew Ralston, and Robert Paterson. Mr Cross, Convener.

SHOW OF 1898.

A letter was read from the Secretary of the Berwickshire Agricultural Association intimating a donation of £10 to the funds of the Show for 1898 if held in the county of Berwick, and of £25 if held at Berwick-on-Tweed.

IMPORTATION OF LIVE STOCK AND DEAD MEAT.

The next item was the motion of which Mr **Andrew Hutcheson** gave notice at last meeting, but before calling upon Mr Hutcheson, the Chairman read a ruling debarring from discussion anything which would involve an alteration of the finding arrived at by the Board in December in favour of the compulsory slaughter at the port of debarkation of all cattle, sheep, and pigs, except under very special conditions, being made statutory and not left to the discretion of a Government department. He read the terms of the resolution under which the deputation to London was appointed in December in support of the policy now embodied in the Diseases of Animals Amendment Bill, and the Standing Orders which debarred any alteration of that finding except under conditions which had not been complied with in the present case. The Board could not reopen the question of slaughter *v.* no slaughter, but might discuss the wisdom of a dead-meat trade. The motion of Mr Hutcheson, as it appeared on the paper, was in order; he made that ruling to prevent the discussion being out of order.

Mr **Hutcheson**, at the outset, asked leave to alter his motion to read as follows: "That in the opinion of the Directors it is desirable, in the true interests of feeders and breeders, and as the best practical method of enabling consumers to know what kind of meat they were purchasing, that foreign cattle be imported only as dead meat." He said it was not possible to breed and feed cattle profitably at 50s. per cwt. dead-weight. The landlords were possibly more deeply concerned in this than any other section. They could not run away from their land. If land was to be still further depressed, what was to become of those who had mortgages on land? He did not advocate Protection; what they wanted was fair-play. At present we protected the foreigner, and had given our trade in fat cattle over to them. The consumer was not getting the benefit of the cheap cattle; he was paying as much as he did when cattle were £20 per head in place of £16 as at present. If all cattle were brought here as dead meat the farmers could live. Home beef was worth more per lb. than any beef he ever saw. If the country must be protected from disease, and he granted that it should, then their only safety was a dead-meat trade.

Mr JON. MIDDLETON seconded the motion, which was supported by Mr FERGUSON.

Mr MARTIN sympathised very much with all that had been said by those who had preceded him, but he had the feeling that they were better to take what they could get, and not imperil it by asking what they knew they could not get at that stage. He was therefore constrained to move that, seeing Mr Long's bill gave effect to the resolution passed by the Board in December, and subsequently supported by deputation to the President of the Board in London, it was inexpedient to take any further steps at present.

Mr GORDON seconded the amendment. As one of the members of their deputation he endorsed what Mr Martin had said.

Mr DAVID WILSON was extremely sorry the amendment had been proposed. He could not see there was any antagonism between the motion as now proposed and Mr Long's bill.

Mr SCOTT DUDGEON questioned whether it was expedient to press the amendment, seeing Mr Hutcheson had come so far.

Mr MARTIN offered to withdraw his amendment if Mr Hutcheson would accept a rider that his resolution was by no means hostile to the Government bill.

The CHAIRMAN would allow no reference to the Government bill, as that had been already settled.

Mr MARTIN, with consent of his seconder, then withdrew his amendment, and Mr Hutcheson having briefly replied on the discussion, the resolution was unanimously adopted.

FERTILISERS AND FEEDING STUFFS ACT, 1893.

Mr SCOTT DUDGEON gave in the report of the Committee appointed to consider the working of this Act. The inquiries made had brought out very clearly that the only instances in which the Act was operative were those in which some local organisation had taken means to procure samples and induce farmers to take advantage of the Act. The success of the Act in Perthshire was entirely due to two analytical associations; every sample had come through their agency. Unless where worked in that way the Act was absolutely a failure. The recommendations of the Committee were as follows:—

1. That the Highland and Agricultural Society memorialise those County Councils within whose bounds the provisions made for the administration of the Act have failed to induce farmers to take advantage of it, and direct their attention to the procedure followed in those counties where the results have been more favourable—strongly impressing upon them the necessity of adopting similar methods of administration because of the benefits which would thus result alike to farmers and to agriculture in their districts.

2. That local analytical associations, and where no such associations exist, county agricultural societies be communicated with, and these urged to co-operate with their County Councils in the effort to make the Act operative, drawing their attention specially to the benefits which have resulted where the trouble and expense connected with sampling, &c., have been undertaken by such associations as theirs.

3. That the Board of Agriculture be approached and the points in which the Act and the regulations for its administration have been found defective explained, and the Board urged to have these amended as follows:—

(*a*) That the penal clauses under sect. 3 of the Act be modified or cancelled altogether.

(*b*) That the regulations to be followed in sampling, and the cumbersome procedure in notification and transmission of samples, &c., to sellers and analysts be simplified.

(*c*) That the analyst shall not be furnished with a copy of the invoice, nor the buyer required to give any further information to the analyst than the constituents of the article he wishes determined.

(*d*) That any statement made in a circular or advertisement descriptive of a fertiliser shall have effect as a warranty by the seller as in the case of a *feeding-stuff.*—See Sect. 2 (4).

(*e*) That any analytical association or agricultural society, on satisfying the Board of Agriculture as to its constitution and status, shall be entitled to take samples and have analyses made by a district analyst of any fertiliser or feeding-stuff purchased by any of its members as if such association or society were itself the buyer of the fertiliser or feeding-stuff.

The foregoing report was unanimously agreed to, and a vote of thanks awarded to the Committee, and especially to the Convener for his work in connection with it.

FORESTRY.

A minute of Committee held same day was read and adopted.

UNSOUNDNESS IN HORSES.

The circular from the Hunters' Improvement Society on this subject was, on the motion of Mr SINCLAIR SCOTT, laid on the table.

DAIRY EXAMINATIONS.

The minute of meeting of the Dairy Committee held same day was read, and the following motion by Mr CROSS unanimously agreed to: "That negotiations be opened with the Royal Agricultural Society of England with a view to having one standard diploma in dairying for Great Britain. A joint-committee of both societies to be appointed to control this work."

OFFICE-BEARERS AND DIRECTORS.

The following Committee of selection was appointed: Messrs Charles Howatson, David M'Gibbon, and Alexander Cross, for Glasgow; C. M. Cameron, Balnakyle, for Inverness; A. M. Gordon for Aberdeen; Andrew Hutcheson for Perth; John M. Martin for Stirling; James Lockhart for Dumfries; Sir James Gibson-Craig, Bart., for Edinburgh; and the Master of Polwarth for the Border district. Mr Martin, Convener.

MEETING OF DIRECTORS, 6TH MAY 1896.

Present.—*Vice-Presidents*—Sir Robert Menzies of Menzies, Bart.; Mr Middleton, Clay of Allan. *Ordinary Directors*—Mr Speir, Newton Farm; Mr Dun, Easter Kincaple; Mr Cross of Knockdon; Captain Clayhills Henderson of Invergowrie, R.N.; Mr Malcolm, Dunmore Home Farm; Mr Duthie, Tarves; Mr Hutcheson, Beechwood; Mr Martin of Auchendennan; Mr Hope, Eastbarns; Mr Gordon of Newton; Mr Wilson, Chapelhill; Mr Howatson of Glenbuck; Mr Paterson, Hill of Drip; Rev. John Gillespie, Mouswald; Mr Cran, Kirkton. *Extraordinary Directors*—Mr Macduff of Bonhard; Mr Buttar, Corston; Mr Elliot, Hollybush; Mr Ferguson, Pictstonhill; Mr Glendinning, Hatton Mains; Mr Sinclair Scott, Burnside; Mr Shirra Gibb, Boon. *Chemist*—Dr A. P. Aitken. *Auditor*—Mr William Home Cook, C.A. *Engineer*—Mr J. D. Park. Rev. John Gillespie in the chair.

The SECRETARY reported apologies for the absence of Lord Provost Dewar, Perth; Sir James H. Gibson-Craig of Riccarton, Bart.; Sir Robert D. Moncreiffe of Moncreiffe, Bart.; Mr Cameron, Balnakyle; Mr Davidson, Saughton Mains; Mr Dudgeon of Cargen; Mr Scott Dudgeon, Longnewton; Mr Gilmour of Montrave; Mr M'Gibbon, Ardnacraig; Mr Maxwell, yr. of Munches; Mr Ralston, Glamis; Mr Wilson, yr. of Carbeth; and Principal Williams.

The minutes of the preceding meeting were, with two slight amendments, adopted.

THE LATE MR COLIN J. MACKENZIE OF PORTMORE.

The Directors resolved to record in the minutes an expression of the deep regret with which they received the intimation of the death of Mr Colin J. Mackenzie of Portmore, and of their sense of his valuable services to the Society for many years as a Director, a Vice-President, and a member of various Committees. The Chairman, as an old colleague, referred in sympathetic terms to the personal character of Mr Mackenzie as a most useful member of the Board of Directors. The Chairman further referred to the death of the senior member of the Society, Lieut.-Colonel M'Inroy, and mentioned that the oldest member of the Society now was the Earl of Mansfield, whose grandson, Lord Balvaird, was Chairman of the Perth Local Committee this year.

GOVERNMENT GRANT.

The Secretary was authorised to make the usual application for the grant from the Board of Agriculture for the current year.

PERTH SHOW.

Attending Members.—Some time was spent in nominating attending members for the various classes at Perth. The following is the list as finally adjusted: *Shorthorns*—Mr John Ballingall, Dunbog. *Aberdeen-Angus*—Mr W. T. Malcolm, Dunmore. *Galloway*—Mr W. S. Ferguson, Pictstonhill. *Highlanders*—Sir Robert

Menzies, Bart. *Ayrshires*—Mr John Speir. *Draught Stallions*—Captain Clayhills Henderson and Mr R. Sinclair Scott. *Draught Mares and Fillies*—Messrs William Duthie and John M. Martin. *Horses for Road or Field*—Lord Provost Dewar and Mr James Hope, Eastbarns. *Hackneys*—Mr David Wilson, Carbeth. *Ponies*—Mr George S. Dun, Kincaple. *Shetland Ponies*—Mr John Cran. *Blackfaced Sheep*—Mr C. M. Cameron, Balnakyle, and Mr A. Macduff of Bonhard. *Cheviots*—Mr Shirra Gibb, Boon. *Border Leicesters*—Mr John Wilson, Chapelhill. *Shropshires*—Mr C. Howatson of Glenbuck. *Fat Sheep*—Mr Walter Elliot. *Swine*—Mr A. M. Gordon of Newton. *Poultry*—Mr J. S. Davidson, Saughton Mains. *Butter*—The Master of Polwarth.

Dairy Classes.—It was agreed, on the motion of Mr W. S. FERGUSON, seconded by Captain HENDERSON, that the Shorthorn judges should judge the class of dairy cattle of that breed, and the Aberdeen-Angus judges the dairy class of that breed; and, on the motion of Mr GLENDINNING, the Shorthorn judges were also appointed to judge the other dairy classes.

Donation.—A donation of £10 from Mr Maxwell of Donavourd towards the expenses of the Perth Show was intimated, and the Secretary instructed to acknowledge the same with thanks.

Horticultural Society.—Mr MACDUFF asked what arrangements, if any, had been made for the accommodation of the Horticultural Society within the showyard? The SECRETARY intimated that the arrangements he had outlined were regarded as satisfactory by the local parties.

MILKING-MACHINE TRIAL.

Mr CROSS reported that a meeting had been held of the Committee appointed at last meeting to consider the propriety of holding a competitive trial of milking-machines at the Glasgow Show of 1897, and that they recommend—(1) That such a competitive trial be held; (2) that a prize of £50 be offered; and (3) that it be remitted to the Committee to draft conditions, consider the question of expense, and report to a subsequent meeting.

Mr SPEIR seconded, and the motion was unanimously agreed to.

PUBLIC HEALTH BILL.

Mr W. S. FERGUSON brought under notice of the Board the clause in the Public Health Bill bearing on the laying down of manure-heaps within fifty yards of a public highway. As practical men, they knew that the aim of farmers was to cart out the contents of the manure-heaps and place them in the fields near the highway, alike for convenience in carting and to save cutting up the land, and no injury to public health had ever been traced to this cause. But as further indicating the absurdity of the proposals in this clause, it would at once occur to them that it would be necessary to remove a good many of the existing farm dungsteads which were located within the prohibited distance. He concluded by moving—"That the Directors of the Highland and Agricultural Society are opposed to section 14, sub-section 5, of the Public Health Scotland Bill now before Parliament, in so far as it is therein provided that manure-heaps shall not be within fifty yards of any public road. The Directors consider that this would be an unnecessary interference with farmers in their preparations for cultivating the land, and that such a restriction is not required in safeguarding the public health."

Captain CLAYHILLS HENDERSON seconded the motion.

The CHAIRMAN emphasised the phase of the question at which Mr Ferguson had simply glanced—namely, the changes which would be necessary on existing farm steadings if these proposals were to become law. In his own parish of Mouswald he found that 50 per cent of the farm steadings would have to be shifted should the bill pass in its present form. Ultimately Mr Ferguson's motion was unanimously agreed to.

Mr FERGUSON then moved in regard to another clause in the bill—"That the Directors are also of opinion that clause 25, section 44, of the same measure, is calculated to become in many cases a great hardship and grave injustice. They consider that when carcasses of meat are sent to the open market in good faith to stand inspection before being used as human food, the sender, in suffering the loss in case of such meat being condemned, ought not to be liable to criminal prosecution."

Mr ANDREW HUTCHESON seconded this motion. It was a great hardship that a man whose grieve in good faith sent a carcass into the dead-meat market marked "for inspection" should find himself charged the following morning at the Police Court with selling diseased meat, and be liable to three months' imprisonment. He would be strongly in favour of a clearing-house, so that the man who attempted to smuggle in diseased meat might be treated as he deserved.

This motion was also unanimously agreed to, and a consulting Committee appointed, consisting of Sir James Gibson-Craig, Bart.; Messrs Andrew Hutcheson,

W. S. Ferguson, and John Wilson, to watch over the further progress of the bill, and take what steps might be necessary to give effect to these motions.

INSPECTION OF DAIRIES.

A letter was read from the Royal College of Veterinary Surgeons asking attention to the attempt of the Glasgow Corporation to make medical officers the inspectors of health in dairy cattle under the Public Health Bill, and requesting the aid of the Board to prevent such a slur being passed on the veterinary profession.

Mr SPEIR moved that the request be granted, and Mr J. M. MARTIN seconded.

This motion was also unanimously agreed to, and the Committee authorised to watch over the interests involved in the resolution of the Glasgow municipality.

DISEASE IN HORSES.

Mr SINCLAIR SCOTT gave notice that at next meeting he would move a resolution that the Board of Agriculture be requested to establish a quarantine for horses imported from America and Canada. There was reason to believe that disease was being introduced into this country by these horses.

EDUCATIONAL.

The SECRETARY formally reported the results of the examinations for the Society's diploma and certificate in agriculture and forestry. Twenty-nine students presented themselves for examination in agriculture. Ten obtained the diploma, and four the certificate; the remainder failed to pass. In forestry, ten students came forward. One obtained a first-class certificate, and two gained second-class certificates. The others failed to pass.

MEETING OF DIRECTORS, 3D JUNE 1896.

Present.—*Vice-Presidents*—Sir Robert Menzies of Menzies, Bart.; Mr Middleton, Clay of Allan. *Ordinary Directors*—Mr Speir, Newton Farm; Mr Dun, Easter Kincaple; Mr Davidson, Saughton Mains; Mr Macpherson Grant, Kingussie; Mr Cross of Knockdon; Mr Malcolm, Dunmore Home Farm; Mr Cameron, Balnakyle; Mr Hutcheson, Beechwood; Mr Hope, Eastbarns; Mr Wilson, Chapelhill; Mr Howatson of Glenbuck: Sir Ralph Anstruther of Balcaskie, Bart.; Mr Paterson, Hill of Drip; Sir James H. Gibson-Craig of Riccarton, Bart.; Mr Marr, Cairnbrogie; Mr Cran, Kirkton. *Extraordinary Directors*—Sir Alexander Muir Mackenzie of Delvine, Bart.; Mr Macduff of Bonhard; Mr Buttar, Corston; Mr D. Wilson, yr. of Carbeth; Mr Gilmour of Montrave; Mr Elliot, Hollybush; Mr W. S. Ferguson, Pictstonhill; Mr Glendinning, Hatton Mains. *Chemist*—Dr A. P. Aitken. *Auditor*—Mr Wm. Home Cook, C.A. *Engineer*—Mr James D. Park. The Rev. John Gillespie in the chair.

The SECRETARY reported apologies for the absence of the Right Hon. Lord Balvaird; the Hon. the Master of Polwarth, Humbie House; Sir G. Graham Montgomery of Stanhope, Bart.; Sir Robert D. Moncreiffe of Moncreiffe, Bart.; Lord Provost Dewar, Perth; Mr Dudgeon, The Grange; Mr Scott Dudgeon, Longnewton; Mr Duthie, Tarves; Mr Shirra Gibb, Boon; Mr Gordon of Newton; Captain Clayhills Henderson of Invergowrie, R.N.; Mr Lockhart, Mains of Airies; Mr Lumsden of Balmedie; Mr Martin of Auchendennan; Mr Ralston, Glamis; Mr Sinclair Scott, Burnside; Mr Walker, Portlethen.

DISEASE IN HORSES.

The CHAIRMAN said that it would be in the recollection of the Board that Mr Sinclair Scott had given notice at last meeting of a motion regarding the inspection of imported horses. Mr Scott had intimated to the Secretary that he had not received all the information he had wished, and he desired that his motion should in the meantime be withdrawn.

APPOINTMENT OF TREASURER.

A letter was read from Sir JAMES GIBSON-CRAIG thanking the Board for selecting his name for the treasurership. He had very great pleasure in acceding to this request, more particularly as his father held that most honourable position before him.

The CHAIRMAN suggested that the nomination of an Ordinary Director in room of Sir James should be left over till the close of the meeting.

PERTH SHOW, 1896.

Contributions.—The SECRETARY read a letter from the County Clerk of Perthshire sending the sum of £598, 0s. 2d., contributed by the section of Perthshire in the Perth Show district towards the expenses of the Perth Show. This is £151 more than was received on the last preceding occasion at Perth. No commission has been charged by the collectors. A letter from the treasurer of the county of Kinross forwarding a contribution of £27, 6s. 6d. was also reported. On the last occasion £37 was received from this county. It was agreed to send letters of thanks to the authorities for their liberality.

Railway Facilities.—The CHAIRMAN said that the matter of appointing a Committee to wait upon the railway companies was one of supreme importance. Such a Committee would require to go very minutely into the matter of cheap fares, and every other facility during the whole week of the Show. He hoped they would go into the matter heartily, and appoint the Committee carefully. The following gentlemen were then appointed a General Committee: Lord Provost Dewar; Mr W. S. Ferguson, Pictstonhill; Mr Macduff of Bonhard; Sir Ralph Anstruther; and Mr Macpherson Grant.

Sir JAMES GIBSON-CRAIG suggested that they should also appoint a Committee for Aberdeen and Edinburgh district, who could go more minutely into local arrangements. Mr Glendinning and Mr Hope were accordingly selected to represent the Edinburgh district, and Mr Gordon and Mr Lumsden for Aberdeen.

GLASGOW SHOW, 1897.

The SECRETARY read a letter from the County Clerk of Lanarkshire intimating that the County Council had resolved to collect a similar sum to what they collected in 1888—viz., £800. The County Council of Lanarkshire have decided to pay £151 which they have in hand from the former assessment raised in that county. The sum in 1888 was £105 for that county. The County Council of Argyllshire have resolved to raise the sum of £100 towards this Show, and the County Council of Bute also resolved to impose a voluntary assessment, but the precise amount to be raised is not yet known. A letter was intimated from the County Clerk of Ayrshire stating that the subject will be considered at a meeting on the 9th inst. The city of Glasgow gives £250.

The CHAIRMAN said that these contributions amounted in all to £1300, without taking Bute and Ayrshire into account. He expressed the hope that gentlemen of the Board of Directors connected with Ayrshire would use their influence in getting up a good contribution. Ayrshire got a very large sum year by year from the Highland Society for its local association, so that, apart from the general claim which they had on it as the national Society, they had therefore a special claim on its liberality if they wished to show their appreciation of what the Highland Society had done for them. In answer to Mr Howatson of Glenbuck, the Chairman said that a total sum of £1436 had been paid during the last twenty years to local societies and institutions in the county of Ayr.

Mr ALEXANDER CROSS asked if there was to be a class for three-year-old Ayrshire heifers in milk at the Glasgow Show.

The CHAIRMAN said he did not think it would be competent or proper for that Board to fix any item in the Glasgow prize-list at that time. For many years there had been such a class at Glasgow, and those interested in the matter might proceed on the assumption that what had been in the past would be continued in the future.

CIRCUIT OF SHOWS.

The Committee appointed to consider the question of the circuit of Shows recommended (1) That if satisfactory arrangements could be made the Show should be held every alternate year at either Edinburgh, Glasgow, or Aberdeen, once in every six years in each of these towns; (2) that in the intervening year the Show should be held at one of the other centres, as nearly in sequence as might be practicable, provided satisfactory arrangements could be made financially or otherwise; (3) that the arrangements for the raising of the local fund be made two years in advance, a preliminary Local Committee to be appointed for this purpose; (4) that in the event of the financial or other arrangements in any district not proving satisfactory, the Directors should have power to consider the propriety of holding the Show in another district; and (5) that in the district of the Society's Show no local show be held in that year after the first week in May.

Sir JAMES GIBSON-CRAIG moved the adoption of the report. He said that to keep themselves in a proper position financially they ought to go more frequently to the paying places, for, as they were all aware, several of the towns visited resulted in a considerable loss to the Society.

Mr **John Speir**, Newton, seconded the adoption of the report.

Mr **David Wilson**, yr. of Carbeth, moved that they delay consideration of the matter to the meeting in November, and that meanwhile a printed copy of the report be circulated to the members of the Board.

Mr **Howatson** seconded.

Sir **James Gibson-Craig** said although he did not see the necessity of delay, he had no objection to Mr Wilson's proposal.

The report was accordingly deferred.

Mr **John Speir** then moved that, along with the printed copy of the report, there should be circulated a statement showing the gain and loss at each Show for three rotations back.

The **Chairman** remarked that that information could be found in the volumes of the Society's 'Transactions.'

Mr **Gilmour** seconded Mr Speir's motion.

Mr **Macduff** of Bonhard, seconded by Mr **Ferguson**, Pictstonhill, moved the previous question, and on a division eleven voted for each motion, the latter being carried by the Chairman's casting vote.

Publications Committee.

This Committee recommended that a special vote of thanks be given to Mr Maxwell of Munches for his valuable and most interesting reminiscences of the Dumfries Shows, contributed to this year's volume of the 'Transactions.' They also recommended that the Society's gold medal be offered to Mr Gilmour of Montrave for his article regarding the destruction of farm crops caused by pigeons, rooks, and starlings. Various payments to writers of papers in that volume were recommended, the sum amounting in all to £103—£8 or £10 under the average of former years.

The **Chairman** moved the adoption of the report. He was sure they would very cordially meet the proposal that a special vote of thanks be passed to their veteran member, Mr Maxwell of Munches; nor would they have less hesitation in agreeing to offer the gold medal to Mr Gilmour of Montrave for his investigations of the subject of the destruction of farm crops by wild birds. He believed that the paper would for many years be regarded as a standard work on the subject. His investigations had been most exhaustive and complete, and he deserved great credit for conceiving such an idea and for carrying it out in such a complete and satisfactory way. The report was adopted.

Dairy Diploma.

A letter was read from the Secretary of the Royal Agricultural Society of England suggesting a Conference as to the proposed National Diploma in Dairying, during the week of the London Dairy Show.

Mr **David Wilson**, yr. of Carbeth, proposed that they should act on the suggestion, and he moved that a deputation be appointed.

The following gentlemen were then appointed to represent the Society: The Chairman, Mr Cross (Chairman of the Dairy Committee), and the Secretary.

Public Health Bill.

The **Secretary** reported that he had received from Lord Balfour of Burleigh a copy of the Public Health Bill amended so as to meet the views of the Society.

MEETING OF DIRECTORS, 17th JUNE 1896.

Present.—Vice-President—Sir Robert Menzies of Menzies, Bart. *Ordinary Directors*—Mr James I. Davidson, Saughton Mains; Mr John S. Dudgeon, Longnewton; Captain Clayhills Henderson of Invergowrie, R.N.; Mr W. T. Malcolm, Dunmore Home Farm; the Hon. the Master of Polwarth, Humbie House; Mr Andrew Hutcheson, Beechwood; Mr James Hope, Eastbarns; Sir Ralph Anstruther of Balcaskie, Bart.; Rev. John Gillespie, Mouswald. *Extraordinary Directors*—Sir Robert D. Moncreiffe of Moncreiffe, Bart.; Sir Alexander Muir Mackenzie of Delvine, Bart.; Mr Alexander Macduff of Bonhard; Mr David Buttar, Corston. *Hon. Secretary*—Sir G. Graham Montgomery of Stanhope, Bart. *Chemist*—Mr A.

P. Aitken. *Auditor*—Mr William H. Cook, C.A. *Engineer*—Mr James D. Park, C.E. Rev. John Gillespie in the chair.

The SECRETARY reported apologies for the absence of Lord Balvaird; Sir James H. Gibson-Craig of Riccarton, Bart.; Mr Cran, Kirkton; Mr Cross of Knockdon; Mr Dun, Easter Kincaple; Mr Duthie, Tarves; Mr Glendinning, Hatton Mains; Mr Howatson of Glenbuck; Mr M'Gibbon, Ardnacraig; Mr Martin of Auchendennan; Mr Maxwell, yr. of Munches; Mr Middleton, Clay of Allan; Mr Paterson, Hill of Drip; Mr Wilson, yr. of Carbeth.

PERTH AND GLASGOW SHOWS.

The SECRETARY intimated, with regard to the Perth Show, that he had received a copy of a circular from a local committee in connection with a ball to be held at Perth on one of the nights of the Show, and asking the patronage of the Society. It was agreed to accede to the request.

A letter was intimated from the County Clerk of Ayr in reply to the Society's application for a voluntary assessment in connection with the Glasgow Show of 1897. The County Council, it was stated, had agreed to delay the matter for further consideration.

The CHAIRMAN suggested that it should be remitted to Mr Howatson, Glenbuck, as a County Councillor for Ayr, and the Secretary, to prepare circulars giving information with regard to the grants given by the Society to the county of Ayr, these circulars to be sent to the Councillors before their meeting came on. This was unanimously agreed to.

THE WALLEY MEMORIAL.

The SECRETARY intimated an application from a Committee appointed to promote a memorial to the late Principal Walley, and asking the Society to subscribe towards the fund in view of the Principal's services to the veterinary profession.

The CHAIRMAN said that although it was out of the power of the Society, as a Society, to subscribe, yet he hoped that individual gentlemen would do so, as Principal Walley was one to whom Scottish stockowners owed a great deal.

MEETING OF DIRECTORS, 4TH NOVEMBER 1896.

Present.—*Ordinary Directors*—Mr Cross of Knockdon; Captain Clayhills Henderson, R.N., of Invergowrie; Mr Malcolm, Dunmore Home Farm; Mr Duthie, Tarves; Mr Lockhart, Mains of Airies; Mr Cameron, Balnakyle; Mr M'Gibbon, Ardnacraig; Mr Hutcheson, Beechwood; Mr Wellwood Maxwell of Kirkennan; Mr Wilson, Chapelhill; Mr Howatson of Glenbuck; Mr Paterson, Hill of Drip; Captain Thomas Hope of Bridge Castle; Mr Marr, Cairnbrogie; Rev. John Gillespie, Mouswald; Mr Cran, Kirkton; Mr Speir, Newton Farm; Mr Dun, Easter Kincaple; Mr Wilson, yr. of Carbeth; Mr Dobbie, Campend; Mr Macpherson Grant, Kingussie; Mr Walter Elliot, Hollybush. *Extraordinary Directors*—Mr R. K. Stewart, Murdostoun Castle; Mr Hannah, Girvan Mains; Mr Taylor, Park Mains; Mr Weir, Sandilands; Mr Ferguson, Pictstonhill; Mr Glendinning, Hatton Mains; Mr Maxwell, yr. of Munches; Mr Shirra Gibb, Boon; Mr Middleton, Clay of Allan; Mr Scott Dudgeon, Longnewton. *Treasurer*—Sir James H. Gibson-Craig of Riccarton, Bart. *Chemist*—Dr A. P. Aitken. *Auditor*—Mr Home Cook, C.A. *Practical Engineer*—Mr James D. Park. *Veterinary Surgeon*—Principal Williams. Rev. John Gillespie in the chair.

The SECRETARY reported apologies for the absence of the Hon. the Master of Polwarth; Sir Robert Menzies of Menzies, Bart.; Sir Ralph Anstruther of Balcaskie, Bart.; Mr Gilmour of Montrave; Mr Gordon of Newton; Mr Lumsden of Balmedie; Mr Martin of Auchendennan; Mr D. T. Martin of Girgenti; Mr Sinclair Scott, Burnside; Mr Speirs of Elderslie; Mr J. W. Stuart, Rothesay; Mr Walker, Portlethen.

DECEASED MEMBERS.

It was agreed to minute an expression of regret at the deaths of Sir William Walker, K.C.B., Mr James M'Queen of Crofts, and Mr Dingwall, Ramornie, all of whom had been members of the Board.

CHAIRMAN FOR 1896-97.

Sir JAMES GIBSON-CRAIG moved the re-election of the Rev. John Gillespie as Chairman of the Board for the ensuing year. One reason for this nomination was that Mr Gillespie had only occupied the position for six months, but Sir James would not put his re-election on that ground. It was not advisable to have too many changes, and when they had a good man in the chair they should keep him there. It allowed him to learn his work, and a man was more useful after having had some experience. No man knew the work better than Mr Gillespie, and this was the case before he came to occupy his present position.

Mr DUTHIE seconded, and the motion was unanimously agreed to.

The CHAIRMAN acknowledged the vote, which he accepted as a very great honour. He had endeavoured to discharge the duties to the best of his ability, and would seek to do so in the year before them.

The Standing Committees and Forestry Committee, as nominated by the Board in Committee, were agreed to.

PERTH SHOW.

The SECRETARY reported that an abstract of the accounts had been made up, and there was a balance to the good of about £2500 on the Show. He laid on the table the official list of awards, and reported regarding fines for stock being absent that these had been exceptionally well paid. There were one or two cases of difficulty as to which he asked the assistance of a Committee, and on the motion of the Chairman they were remitted to a Committee consisting of the stewards of live stock and the Chairman of the Show Committee to consider and report.

The SECRETARY further reported that ten cases in which members' tickets had been used by others had been detected, and the members had been communicated with.

The CHAIRMAN stated that the reasons in most cases had been of a comparatively innocent nature, but there was a certain degree of carelessness in particular cases. In some the ticket had been used by a son of the member, but it could not be too widely known that the rights of members are personal, and do not belong to the family of a member. Should the practice be discovered in future it would be necessary to publish the names of the offending members. The Society was entitled to claim the cordial support of the members in regard to these things. The members who had been detected would be written to in plain terms.

It was agreed to award the Society's Silver Medal to the Daimler Motor Car Co. for their motor car exhibited at Perth.

A special vote of thanks was awarded to Lord Provost Dewar for the help he had given to the Society in connection with the Perth Show.

GLASGOW SHOW, 1897.

Sir JAMES GIBSON-CRAIG moved—"That in consequence of the Glasgow holidays taking up the second and third weeks of July, the Show be held on the 6th, 7th, 8th, and 9th July." A letter was read from Mr Sinclair Scott, chairman of the Local Committee, stating that he quite approved of this resolution. And Sir James, in speaking to his motion, said there was a growing feeling in favour of putting the Show a little further forward. A great impetus had been given to this movement by the result of the action of the Royal, which in 1889 altered the date of the show to suit some arrangements of Royalty, and had found the change so beneficial that the June date had been adhered to ever since. Gentlemen who owned heavy stallions thought the date too early, but, as far as he had seen, that section at the Royal had not been worse since than it was before the change was made. What the Royal did the Highland need not be afraid to venture. It was also said that the proposed date was too early for sheep, but the success of the sheep show at Edinburgh had shown that there was nothing in that. Although these were his own views on the general question, they were not the grounds on which the present motion was pressed. He moved that they make the change as an experiment to see how it would pay at Glasgow. There were two special reasons in the case of this Show—the Royal was at Manchester, and the railway connection between that city and Glasgow was very good. This would give an immense impetus to the machinery show, as the one Show would just be a fortnight after the other. The Great Yorkshire had again appropriated the date on which the Highland was usually held, and that was the biggest horse show in the North of England, and next to, if not better than, the Royal. The second reason was peculiar to Glasgow. The last two Shows there had been most disappointing. Between them the Society lost £1662, the reason being that in the one case there was the exhibition, and in the other they had bad weather. These, however, were not sufficient reasons, as in 1884 they had an exhibition to contend against at Edinburgh, and yet made £1850, and in 1886 and 1895 they had bad weather at Dumfries and yet made good profits. He attributed their bad luck at Glasgow to the fact that their old Show date was immediately on the back of the Glasgow holidays, when the people had no money; and, indeed, they generally only resumed work on the Monday preceding the opening of the Show, and did not earn any wages for a fortnight after. This was the reason more than any want of interest in the Show of the Highland Society. The proposal which he now made had received considerable encouragement from the people in the district who were acquainted with the circumstances, and he thought they should adopt the proposal for 1897 and see how it worked. At a subsequent stage Sir James mentioned that all efforts to secure the attendance of the Prince of Wales had failed, so that they had a free hand in fixing their date.

Mr CROSS seconded the motion, which was unanimously agreed to.

The SECRETARY said Mr Sinclair Scott had asked whether the time between the closing date of entry and the opening of the Show could not be lessened. After consultation with the officials and contractors, it was found that while in the matter of printing the catalogues a few days might be saved, in the fitting-up of the showyard the period at present left was short enough. It was therefore agreed that the dates of closing entries should remain unaltered—that is, five weeks before the Show.

A contribution of £350 towards the funds of the Glasgow Show was intimated from the County Council of Ayr, and this was accepted with cordial thanks.

Prize List.—Regarding the prize list and regulations, the CHAIRMAN suggested that the question of the clipping of sheep should be matter of special consideration by the Show Committee; and he also asked that the Secretary prepare a statement of the amount of money expended in prizes in recent years in the different classes by their own Society and the Royal English Society, so that when the premium list came before them this might be exhaustively considered.

Special prizes for Highland bullock stirks were intimated from Lord Malcolm of Poltalloch and Mr T. Valentine Smith of Ardtornish; also gold medals from the Polled Cattle Society for Aberdeen-Angus cattle, and from the Hunters' Improvement Society for Hunter filly, foaled in years 1894, '95, or '96. The thanks of the Society were voted to these donors on the motion of Mr Macpherson Grant.

Milking-Machine Trials.—The minutes of this Committee were read, proposing that entries close on 6th February, and that the trials be held at some farm near Glasgow, between 1st March and the opening of the Show. This report was adopted and the powers granted.

Forage.—The following Committee was appointed to make the forage contract for the Show—viz.: Messrs John M. Hannah, W. S. Ferguson, William Taylor, Alexander Cross, John Speir, R. Sinclair Scott, G. L. Glendinning, and David Buttar, with Mr Ferguson, Convener.

Catering.—The CHAIRMAN urged the importance of doing something to improve the catering for the creature comforts of the public at the Show.

Sir JAMES GIBSON-CRAIG quite agreed, and moved the appointment of a special Committee to consider the question.

Mr MARR seconded.

Mr MIDDLETON urged the importance of making better accommodation for the members in the showyard. The following Committee was appointed to consider and report as to these matters: Sir James Gibson-Craig, Convener; Messrs R. S. Scott, Alexander Cross, Jonathan Middleton, David Wilson, W. S. Ferguson, A. M. Gordon, and Captain Clayhills Henderson.

BORDER SHOW, 1898.

The SECRETARY stated that he had received letters intimating that the County Councils of Peebles and Selkirk had resolved to raise sums in aid of the Show by means of voluntary assessments on owners of lands and heritages.

Mr JOHN WILSON stated that he observed in the local press that the county of Berwick had resolved to give a voluntary assessment for the Show, alike from landlord and occupier.

Dr GIBB said the assessment was imposed on farms above £100 rental, but the condition was attached that the Show should be held at a convenient centre.

Mr MAXWELL proposed that a Committee be appointed to examine sites and report on all the applications which had been made.

Mr WALTER ELLIOT seconded, and the following Committee was appointed—viz.: Sir James Gibson-Craig, Convener; Rev. John Gillespie; Messrs Maxwell, George Dun, and George L. Glendinning.

CIRCUIT OF SHOWS.

The SECRETARY submitted the following memorandum on this subject:—

"The Committee appointed by the Board of Directors on 4th December 1895 to consider and report as to the arrangements for, and the circuit of, the Shows of the Society, submitted the following recommendations to the Board of Directors on 4th June 1896—viz.: (1) That, provided satisfactory arrangements can be made, the Show be held every alternate year at either Edinburgh, Glasgow, or Aberdeen—that is, once in every six years in each of these towns. (2) That in the intervening year the Show be held at one of the other centres, as nearly in sequence as may be practicable, provided satisfactory arrangements can be made, financially and otherwise. (3) That the arrangements for the centre of the Show and the raising of the local fund be made two years in advance—a preliminary Local Committee to be appointed for this purpose. (4) That in the event of the financial or other arrangements obtainable in any district not being considered satisfactory, offers be invited from other districts for the Show of that particular year. (5) That in the district visited by the Society's Show no local show be held in that year after the first week of May. The Board resolved that the consideration of the recommendations of the Committee be postponed till the meeting in November next, and that the recommendations be in the meantime printed and issued to the Directors."

Sir JAMES GIBSON-CRAIG, Convener of the Committee, stated that in view of the great success which had attended the Perth Show, it seemed to be the general opinion that no serious change should at present be made in the circuit of the Shows. He thought, however, it would be desirable to bring Edinburgh in between the Borders and Stirling, so that the Show might not go in successive years to the Borders, Stirling, and Inverness. He was hopeful that if the Show of 1899 were held in Edinburgh, they might be able to obtain a visit from the Prince of Wales. He therefore moved that the recommendations of the Circuit of Shows Committee be allowed to drop, but that the Show of 1899 be held at Edinburgh, provided satisfactory financial and other arrangements can be made.

Mr DUTHIE seconded.

It was unanimously resolved that the recommendations of the Circuit of Shows Committee be dropped; but Mr DAVID WILSON objected to the proposal of the Show of 1899 being held at Edinburgh in place of at Stirling, and moved the previous question. Mr MALCOLM seconded.

On a division, Sir James Gibson-Craig's motion was carried by 13 votes to 5.

HONORARY SECRETARY.

A letter was read from Sir G. Graham Montgomery, Bart., resigning the office of Honorary Secretary, which he has held since the death of the late Sir William Stirling-Maxwell, Bart., in 1877. On the motion of Mr Macpherson Grant, a cordial vote of thanks was passed to him.

RAILWAY RATES.

The CHAIRMAN moved the following resolution: "That the Board of Directors of the Highland and Agricultural Society of Scotland express their disappointment that the railway companies in Scotland have not adopted the system introduced by the leading companies in England, of conveying at reduced rates limited quantities of farm and dairy produce by passenger trains, and resolve to appoint a Committee to take steps to get the system adopted."

Mr MACPHERSON GRANT seconded, and the following Committee was appointed: the mover and seconder, Mr James Hope, Captain Hope, and Mr R. King Stewart of Murdostoun.

FERTILISERS AND FEEDING STUFFS ACT, 1893.

Mr SCOTT DUDGEON, Convener of the Society's Committee appointed on 4th December 1895 to inquire as to the working of the Fertilisers and Feeding Stuffs Act, 1893, reported that, taking advantage of the visit of the President of the Board of Agriculture to Edinburgh on the 21st of last month, the Committee asked for an interview with Mr Long as to the operation of the Act, a request with which Mr Long most readily complied. The Committee met on the 7th ult. to consider the points which should be submitted to Mr Long, when there were present Mr Scott Dudgeon (Convener), Mr Speir, Mr R. Shirra Gibb and Dr Aitken. After full consideration, the Committee resolved to urge upon Mr Long that the Act and the regulations for its working should be altered as follows, viz.:—

"*Amendments of the Act.*

"*Advertisements as Warranty for Fertilisers* (*clause* 2).—Amend clause 2 by the addition of a sub-section providing, as in the case of a feeding-stuff, that 'any statement by the seller of percentages or sources of ingredients in a fertiliser in any circular or advertisement, descriptive of such article, shall have effect as a warranty by the seller.'

"*Sending Invoice to District Analyst* (*clause* 5 *sub-section* 2).—Omit the provision requiring that the invoice, or a copy thereof, be supplied to the district analyst along with a sample for analysis.

"*Amendment of the Regulations.*

"*Regulation No.* 2 (*Definition*).—Extend the definition of 'buyer' and 'buyer's agent' so as to provide that the secretary of an association may be empowered to put the Act in force on behalf of the members of the association.

"*Regulation No.* 5 (*Sampling*).—Alter to read as follows: 'The buyer is forthwith to deliver or send by post to the district analyst one of such samples, with, in the case of a fertiliser, a statement of the constituents to be determined, and in the case of a feeding-stuff, a copy of any circular or advertisement of the seller descriptive of the article to be analysed, the seller's name and address not to be given in the information supplied to the district analyst.'

"*Regulation No.* 7.—Omit the provision requiring the buyer to inform the district analyst of the name and address of the seller.

"*Regulation No.* 11.—Omit the provision requiring the buyer to supply the district analyst with the invoice or a copy thereof.

"*Regulation No.* 13.—The number of bags to be emptied down in taking samples to be altered to—

Not less than two packages or bags where the quantity does not exceed half a ton.
Not less than three bags or packages where the quantity does not exceed 5 tons.
Not less than five bags or packages where the quantity exceeds 5 tons.

"*Sampling by Spear.*—Introduce the following new regulation: 'At the option of either buyer or seller, or at the discretion of the district analyst, the samples of fertilisers in bags may be taken by sampling pale or spear. The sampling spear shall be not less than 12 inches long, and the total quantity abstracted from which to draw the sample shall be not less than 5 lb. where the quantity does not exceed 5 tons, and 10 lb. where the quantity exceeds 5 tons, the material to be drawn.

From not less than four bags where the quantity does not exceed half a ton.
From not less than six bags where the quantity does not exceed 5 tons.
From not less than ten bags where the quantity exceeds 5 tons."

"*Regulation No.* 24.—Omit the clause forbidding the sending of samples of fertilisers in tin vessels."

The interview took place in the Society's Office on the 21st ult., when Mr Long was accompanied by Sir Jacob Wilson, Agricultural Adviser; and Mr Elliot, Secretary of the Board of Agriculture. Mr Long received the Committee very cordially, and most fully and frankly discussed with them the various points submitted. He seemed to entertain favourably most of the views placed before him in support of the amendments suggested by the Committee. Some of these amendments, he pointed out—such as authorising secretaries of associations to put the Act in force on behalf of members of the association, authorising sampling by the spear, lessening the quantities from which samples have to be drawn, and authorising the sending of samples of fertilisers in tin vessels—might be given effect to by altering the regulations framed by the Board of Agriculture, without waiting for the amendment of the Act itself. These amendments he would have at once carefully considered, in the hope that without delay he might be able to effect such changes in the regulations as would in the main meet the views submitted by the Committee. The other alterations, providing for an advertisement of a fertiliser being regarded as a warranty by the seller as in the case of a feeding-stuff, and for the withholding of the invoice from the district analyst, could not be effected without the amendment of the Act itself; and he pointed out that so soon after the passing of the Act there would be hardly any probability of the Government succeeding in passing a measure for its amendment, although it might be possible for a private member of Parliament to introduce and pass such a bill if it were of a non-contentious character. He, however, assured the Committee that he would have all the points submitted most carefully considered by his colleagues and himself, and would do everything he could to make the Act of service to agriculturists.

Mr Dudgeon said they had every reason to be satisfied with their reception by Mr Long. He had specially emphasised the state of matters in Scotland relative to analytical associations, the greater part of the work of which had been stopped. Their desire was to enlarge the scope of the work of these associations, and if the amendments suggested were given effect to, these associations would be even more efficient than they had been before, and the Highland Society would again take in hand their supervision. They need not grudge a little expenditure in that line. He moved a special vote of thanks to Mr Long for the attention he had given to the matter.

Mr SPEIR seconded, and the motion was carried unanimously.

PORTRAIT OF PROFESSOR DICK.

It was agreed to accept a portrait of the late Professor Dick (founder of the Royal (Dick) Veterinary College), taken in 1867, and presented by Vet. Lieut.-Colonel J. H. B. Hallen, who was formerly Principal of the College.

VETERINARY COLLEGES.

It was agreed to grant three additional silver medals to Principal M'Call for the Glasgow Veterinary College, on the understanding that, if applied for, a similar grant would be made to the other two veterinary colleges in Scotland.

MEETING OF DIRECTORS, 2D DECEMBER 1896.

Present.—Ordinary Directors—Mr Cross of Knockdon; Captain Clayhills Henderson of Invergowrie, R.N.; Mr Malcolm, Dunmore Home Farm; Captain Dundas, yr. of Arniston; Mr Lockhart, Mains of Airies; Mr Martin of Auchendennan; Mr Hope, Eastbarns; Mr Wilson, Chapelhill; Mr Howatson of Glenbuck; Mr Paterson, Hill of Drip; Captain Thomas Hope of Bridge Castle; Mr Marr, Cairnbrogie; Rev. John Gillespie, Mouswald; Mr Cran, Kirkton; Mr C. H. Scott Plummer of Sunderland Hall; Mr Dun, Easter Kincaple; Mr Wilson, yr. of Carbeth; Mr Dobbie, Campend; Mr Lumsden of Balmedie; Mr Elliot, Hollybush. *Extraordinary Directors*—Mr D. T. Martin of Girgenti; Mr A. A. Speirs of Elderslie; Mr R. K. Stewart, Murdostoun Castle; Mr Jas. W. Stuart, Rothesay; Mr Hannah, Girvan Mains; Mr Taylor, Park Mains, Renfrew; Mr Weir, Sandilands; Mr Gilmour of Montrave; Mr Glendinning, Hatton Mains; Mr W. J. Maxwell, yr. of Munches; Mr Sinclair Scott, Burnside; Mr Walker, Portlethen; Mr Shirra Gibb, Boon; Sir Robert Menzies of Menzies, Bart.; Mr Middleton, Clay of Allan; Mr Scott Dudgeon, Longnewton. *Chemist*—Dr A. P. Aitken. *Auditor*—Mr William Home Cook, C.A. *Engineer*—Mr James D. Park. *Law Agent*—Mr James Auldjo Jamieson, W.S. Rev. John Gillespie in the chair.

Apologies were reported for the absence of Colonel Sir D. Carrick Buchanan of Drumpellier, K.C.B.; Mr Cameron, Balnakyle; Mr Dudgeon of Cargen; Mr Duthie, Tarves; Mr Douglas Fletcher of Rosehaugh; Mr Gordon of Newton; Mr Macpherson Grant, yr. of Ballindalloch; Mr Hutcheson, Perth; Mr M'Gibbon, Ardnacraig; Mr Speir, Newton Farm.

DATE OF GENERAL MEETING.

The annual general meeting was fixed for 20th January 1897.

PERTH SHOW.

The Shows Committee reported that the question of fines unpaid had been discussed, and in three or four cases the Committee find that the fines are due and payable, and they recommend that the Secretary be instructed to ask for payment, and to intimate that entries will not be accepted from the defaulting exhibitors unless and until the fines are paid.

This report was unanimously approved of.

GLASGOW SHOW.

Clipping Sheep.—The Shows Committee reported various matters connected with the Glasgow meeting of 1897. Regarding the clipping of sheep, they reported that the rule as presently framed was quite satisfactory for all breeds excepting Cheviots, and as far as these were concerned the Committee had resolved to invite the opinion of the exhibitors of Cheviot sheep at the last five Shows of the Society.

Premium List.—The Secretary reported that the Committee proposed to add about £550 to the premium list for the Glasgow Show, and that the detailed recommendations of the Committee would be printed and issued for consideration at next meeting of the Board.

District Shows.—Grants of various sums made to these for various objects, amounting in all to £385, were recommended. The corresponding grants in previous years amounted to £249 in 1894, £340 in 1895, and £332, 14s. 4d. in 1896. The Committee also recommend that the grants to the Highland Industries and Kilmarnock Dairy School be continued as in former years.

The **Chairman**, in moving the adoption of this part of the report, directed public attention to the fact that the Society was not merely greatly augmenting its own premium list this year, but now, as always, was encouraging the smaller class of exhibitors by the grant of a large sum for local competitions.

Special Premiums.—Mr Gilmour's grant of £25 for yearling gets of Thoroughbred stallions was again intimated, and the Chairman conveyed the cordial thanks of the Board to Mr Gilmour. A special prize of £20 was also intimated from Mr Cross of Knockdon in aid of the prizes for three-year-old Ayrshire cows, and the cordial thanks of the Board were conveyed to him also. The Hackney Horse Society intimated its grant of a £10 gold medal as before.

Science Committee.

The report of a meeting of this Committee was submitted by the Secretary.

Analysis of Soil.—A letter was read from Mr John Speir relative to a failure of crop in a fruit-field. His idea was that the supply of available potash had become deficient. An expenditure of £10 was recommended in connection with an analysis of this soil.

Cattle-Feeding Experiments.—The Committee recommended that the cattle and sheep feeding experiments be continued, the sum of £100 voted for the work, and the following Committee appointed to carry it out—viz.: Messrs David Wilson, Jon. Middleton, John Wilson, J. Scott Dudgeon, R. Shirra Gibb, James Hope, and Dr Aitken.

Mr **John Marr** took exception to this vote. A good deal of the money would be wasted, as he had an idea that the results obtained in cattle-feeding experiments on the present basis were misleading.

Mr **David Wilson**, Convener, explained that the grant was to enable experiments carried out last year to be continued with some modifications. £100 was the maximum sum which could be spent according to the regulations. He thought Mr Marr was wrong in his views on the subject of cattle-feeding experiments. The point aimed at by them was to discover what concentrated foods were the most economical to be fed to cattle along with a sufficiency of turnips and straw. If properly conducted, the Committee felt that the money would be well spent.

Mr **Marr** agreed to withdraw his objections.

Miscellaneous.—A grant of £25 was recommended for experiments with nitragin, and a similar sum was voted for experiments on clover-sickness. It was agreed to communicate with the Board of Agriculture in regard to the revision of the regulations for fertilisers and feeding-stuffs.

A letter was read from Mr Colin Campbell of Jura asking the Board to take up an investigation of the causes of braxy, and a Committee was appointed, consisting of Dr Shirra Gibb, the Chairman, and Principal Williams, to consider the matter and report.

This report was adopted.

Miscellaneous.

Sheep-Stealing Committee.—Mr Duncan MacDiarmid, Camusericht, was delegated to represent the Society as a witness before this Committee.

Tuberculosis Committee.—A letter was read from Mr Speir in reference to giving evidence before this Committee, but the Directors considered it better not to nominate any witness to represent the Society.

Publications.—It was unanimously agreed to publish in the 'Transactions' hereafter photographs of the winners of the President's medals at the annual Show.

It was remitted with powers to the Finance Committee to arrange for the cleaning of the Society's Hall and the repairing of the furniture, at a cost of about £150.

On the recommendation of the Finance Committee the salary of Mr Cowie, junior clerk, was advanced from £90 to £110 per annum.

The Board sat in Committee and appointed the Judges for the Glasgow Show.

MEETING OF DIRECTORS, 6TH JANUARY 1897.

Present.—Ordinary Directors—Mr Cross of Knockdon; Mr Malcolm, Dunmore Home Farm; Captain Robert Dundas, yr. of Arniston; Mr Cameron, Balnakyle; Mr Hutcheson, Beechwood; Mr Martin of Auchendennan; Mr Hope, East Barns; Mr Gordon of Newton; Mr Wilson, Chapelhill; Mr Howatson of Glenbuck; Sir Ralph Anstruther of Balcaskie, Bart.; Rev. John Gillespie, Mouswald; Mr Cran, Kirkton; Mr C. H. Scott Plummer of Sunderland Hall; Mr Speir, Newton Farm; Mr Dun, Easter Kincaple; Mr Dobbie, Campend; Mr Lumsden of Balmedie; Mr Macpherson Grant, Kingussie; Mr Elliot, Hollybush. *Extraordinary Directors*—Mr D. T. Martin of Girgenti; Mr R. K. Stewart, Murdostoun Castle; Mr Hope Vere of Blackwood; Mr Hannah, Girvan Mains; Mr Gilmour of Montrave; Mr Ferguson, Pictstonhill; Mr Glendinning, Hatton Mains; Mr Sinclair Scott, Burnside; Mr Shirra Gibb, Boon; Sir Robert Menzies of Menzies, Bart.; Mr Middleton, Clay of Allan. *Treasurer*—Sir James H. Gibson-Craig of Riccarton, Bart. *Auditor*—Mr William Home Cook, C.A. *Law Agent*—Mr James Auldjo Jamieson. *Chemist*—Dr A. P. Aitken. *Veterinary Surgeon*—Principal Williams. Rev. John Gillespie in the chair.

Apologies were reported for the absence of the Hon. the Master of Polwarth; Colonel Sir D. Carrick Buchanan of Drumpellier, Bart.; Mr Dudgeon of Cargen; Mr Scott Dudgeon, Longnewton; Mr Duthie, Tarves; Mr Fletcher of Rosehaugh; Captain Hope of Bridge Castle; Mr Lockhart, Mains of Airies; Mr Maxwell of Kirkennan; Mr Maxwell, yr. of Munches; Mr Paterson, Hill of Drip; Mr Windsor Stuart, Rothesay; Mr Walker, Portlethen; Mr Wilson, yr. of Carbeth; Mr Speirs of Elderslie.

THE LATE MR THOMAS ELLIOT.

The CHAIRMAN referred in suitable terms to the death of Mr Thomas Elliot, Blackhaugh, who had been at various times a Director of the Society, and had frequently judged at its Shows.

FINANCE.

The Finance Committee asked and received powers to arrange for the cleaning and renovating of the paintings in the Society's chambers, at a cost of about £110. Sir James Gibson-Craig, the Convener, admitted that this was rather a large sum, but the work was absolutely necessary. It had been neglected in the past, and hence it cost rather more now to put the paintings in order. The statement of accounts for the year ending 30th November 1896 was laid on the table. The amount of capital at that date was £88,314, 8s. 6d., and the excess of receipts over expenditure during the year was £4032, 5s. 9d. The net profit on Perth Show was £2511, 16s. It was recommended that the appointment of an Honorary Secretary in room of Sir Graham Montgomery, Bart., be delayed until the June meeting of the Society.

These minutes were adopted.

GLASGOW SHOW.

The SECRETARY read the recommendations of the Shows Committee regarding the Prize-List.

Clipping Cheviot Sheep.—The Committee recommended that the request of the majority of Cheviot sheep exhibitors be granted, that the rule regarding the clipping of show sheep be suspended, so far as Cheviots are concerned.

Sir JAMES GIBSON-CRAIG had personally the feeling in agreeing to this that the measure was tentative, and would only apply for one year.

Sir ROBERT MENZIES begged the gentlemen of the press to take note that he regarded the clipping of blackface sheep at 1st January as a grand mistake.

The recommendation of the Committee was adopted.

Stall Rents.—Mr A. M. GORDON called attention to the question of stall-rent. It had often seemed to him that the charges bore very heavily on those who were their members. As a member of the Royal, he found that he could enter there for 5s., whereas it cost him 15s. to enter the same animal at the Highland. He thought the best way for the Society to do when it was in funds was to distribute the surplus they had in giving additional facilities to the members. He moved that it be remitted to the Shows Committee to consider carefully the question of stall-rent, with a view to giving additional privileges to members if that were possible. Taking the case of a member paying the higher subscription, he found that, in general, if he were to enter a single beast it would pay him better not to be a member.

The CHAIRMAN doubted whether Mr Gordon was in order. They were considering the Show of 1897, and this was a matter which concerned the Show of 1898.

Mr GORDON then said he would press his motion for this year.

Mr R. SINCLAIR SCOTT seconded, as he held the view which he had pressed in the Shows Committee, that it would certainly be an advantage if they could see their way to reduce the very large stall-rents presently charged.

Sir JAMES GIBSON-CRAIG hardly called this a motion. There must be something definite put before the Directors.

Mr J. M. MARTIN moved that the stall-rent be reduced 25 per cent.

Mr W. S. FERGUSON said this matter had been very carefully considered by the Shows Committee, and he suggested that Mr Gordon might rest satisfied with the debate, as nothing could be done this year in any case.

Mr Gordon then, with consent of his seconder, withdrew the motion.

The CHAIRMAN pointed out that it should be borne in mind that, while the member's subscription to the Royal Agricultural Society was 20s. a-year, or £15 for life membership, the subscription which farmers had to pay for the membership of the Highland and Agricultural Society was only 10s. a-year, or £5, 5s. for life membership.

Special Prizes.—On the suggestion of the Secretary it was agreed that the last date for receiving intimation of special prizes be 1st February instead of 1st March as formerly. The Chairman hoped they would receive many additions before that date.

Lord BLYTHSWOOD intimated the donation of President's medals for the best animal of each breed of live stock, and received the cordial thanks of the Board for his handsome donation. It was agreed that animals which had already won the President's medal may compete again for the same.

The Shorthorn Society's special prize of £20 was intimated for the best shorthorn bull, but, as the Tweeddale gold medal goes this year to the same animal, it was agreed to ask the Society to transfer the prize to the best shorthorn cow or heifer.

Mr James Lockhart's special prize of £10 for the best Clydesdale stallion was again offered and cordially accepted, with best thanks.

Premium List.—The total amount offered by the Society is £2417, being an increase of £547 on the amount offered in 1896. Sir James Gibson-Craig moved the approval of the premium list for cattle, which was passed without amendment, as were also the classes for Clydesdale or draught horses. On the motion for approval of the premiums offered for horses for road or field—

Mr SCOTT PLUMMER moved that a class be instituted for brood mares suitable for producing hunters. He had moved this in Committee, where the proposal was defeated by a majority of 8 to 5. This was a most important class, and the end was not met by having classes for young stock only. It was said they would get a small entry. He admitted that might be so, but seeing there was a brood mare class in all other sections, he thought it was a mistake not to have it for hunters.

Mr D. T. MARTIN seconded.

Sir JAMES GIBSON-CRAIG moved the previous question. If they were to add classes in this fashion he did not know where they might end.

Mr W. S. FERGUSON seconded. The question had been very well considered in Committee, and the impression was that this was a class of stock which people would not show at that season of the year, so that the representation was not what it should be.

Mr J. M. MARTIN supported Mr Scott Plummer's motion. The argument about few entries had not much in it. It was a dangerous principle to introduce, that because entries were small classes should be abandoned. He suggested that in order to provide the prize money the other prizes for road or field should be reduced, but personally he would support an additional grant for the brood mare class.

Mr GILMOUR supported the previous question. The class had been fairly tried, and they must be guided to a very great extent by their past experience. That taught them that, while men might send their brood mare for a day to a local show, they would not send them by train. Past experience had plainly told them that it was no use opening the class. These foals were much better at home than spending a week in a Glasgow showyard. On a vote being taken, 18 were found to be for the previous question and 10 for the motion, which was therefore lost.

Hackneys.—The SECRETARY read the recommendations of the Scottish Committee, and, on the motion of Mr Martin, they were unanimously adopted.

Shetland Ponies.—A suggestion by Mr Brydon that the class for Shetland pony mare or gelding should be for animals three years old and upwards was unanimously agreed to.

Horse-Shoeing.—Sir JAMES GIBSON-CRAIG offered the sum of £12 for prizes for horse-shoeing, and his handsome donation was accepted with cordial thanks. The classes and terms of competition will be the same as at Dumfries.

Sheep.—Sir ROBERT MENZIES moved that the prize money for Shropshires be the same as for Blackface, Cheviot, and Border Leicesters, but the motion failed to find a seconder.

A letter was read from Mr Lumsden of Arden, suggesting that the Society should offer prizes for fleeces of blackface wool. Mr Cross asked if Mr Lumsden would provide the money. Mr W. S. Ferguson said their former experience with a competition of this kind had not been quite satisfactory. Mr Gilmour suggested that the Secretary call the attention of Mr Lumsden to the fact that special prizes will be accepted up to 1st February, and this became the finding of the meeting. Mr J. M. Martin said he doubted the wisdom of having such a competition, and he did not think they should invite prizes.

Stewards.—The Stewards were appointed as follows: *Cattle*—Rev. John Gillespie. *Horses*—Mr Ferguson. *Sheep and Pigs*—Mr Walter Elliot. *Forage*—Mr David Buttar. *Implements*—Messrs Jon. Middleton and G. R. Glendinning. *Grand Stand*—Mr Hutchison.

Members' Pavilion.—It was resolved to have the Committee-Room in the show-yard fitted up as a Pavilion for the use of members.

Forage.—The offer of Messrs J. & W. Wallace, Gallowgate, for the forage was accepted, and the Secretary was authorised to make the usual arrangements for cleaning the yard.

SHOWS COMMITTEE.

Mr John Dobbie, Campend, was unanimously elected a member of the Shows Committee.

BORDER SHOW, 1898.

A communication was read from the Berwick County Council intimating the raising of a voluntary assessment on owners and occupiers of lands and heritages of £100 and upwards in the county of Berwick. Dr Shirra Gibb said he thought this would yield about £300. It was intimated that the offer was contingent on the selection of a favourable show site.

DAIRY DIPLOMA.

The CHAIRMAN reported verbally that Mr Cross, Mr Macdonald, and himself had an interview with a pretty representative Committee of the Council of the Royal. They had a free interchange of opinion, and while it would be premature for him to say anything definitely, he might at least say that their reception was, on the whole, very favourable. The Royal Committee were as anxious as they that whatever diploma were given the examinations should be high and uniform, so that the recipients should be well qualified both in theory and practice of dairying.

BACTERIA IN CHEESE-MAKING.

A letter was read from Mr Gifford, secretary of the Stewartry Dairy Association, applying for a grant of £100 in aid of a proposed investigation as to the use of pure cultures of bacteria in cheese-making. The letter stated that, in view of an important discovery made by Mr J. R. Campbell, B.Sc., the Association had resolved to employ a bacteriologist to investigate and experiment with pure cultures of bacteria in cheese-making. They desired to secure the services of Mr Campbell, and to offer him such remuneration as would allow him to test their value in cheese-making. They had resolved to fit up a laboratory for the work, and were devoting the whole income of the Association (£130) to this object. The benefits likely to accrue to cheese-makers would be very great. The pure cultures had been tested by Mr J. M'Adam, Craigley, with fairly satisfactory results, but there were still a considerable number of points to be investigated. Letters supporting the application were read from Sir Mark J. M'Taggart Stewart, Bart., and others.

The CHAIRMAN explained that these gentlemen had good reason to hope that a very important discovery in cheese-making had been made, and they showed their sincerity by helping themselves, and in going forward.

Mr CROSS moved that a grant of £50 be made for this object. It would be well-spent money.

Mr JOHN SPEIR seconded, and the motion was unanimously agreed to, on the understanding that a report on the investigations be submitted to the Board.

MEETING OF DIRECTORS, 20TH JANUARY 1897.

Present.—Ordinary Directors—Mr Malcolm, Dunmore Home Farm; Captain Robert Dundas, yr. of Arniston; the Hon. the Master of Polwarth, Humbie House; Mr Hutcheson, Beechwood; Mr Hope, East Barns; Mr Wilson, Chapelhill; Mr Howatson of Glenbuck; Mr Paterson, Hill of Drip; Captain Thomas Hope of Bridge Castle; Rev. John Gillespie, Mouswald; Mr Wilson, yr. of Carbeth; Mr Dobbie, Campend; Mr Macpherson Grant, Kingussie; Mr Elliot, Hollybush. *Extraordinary Directors*—Mr Martin of Girgenti; Mr Weir, Sandilands; Sir Robert Menzies of Menzies, Bart. *Treasurer*—Sir James H. Gibson-Craig of Riccarton, Bart. *Chemist*—Dr A. P. Aitken. *Auditor*—Mr Wm. Home Cook, C.A. *Law Agent*—Mr Jas. Auldjo Jamieson, W.S. Rev. John Gillespie in the chair.

The SECRETARY reported apologies for the absence of Colonel Sir David Carrick Buchanan of Drumpellier, K.C.B.; Mr Cran, Kirkton; Mr Cross of Knockdon; Mr Scott Dudgeon, Longnewton; Mr Duthie, Tarves; Mr Ferguson, Pictstonhill; Mr Shirra Gibb, Boon; Mr Glendinning, Hatton Mains; Mr M'Gibbon, Ardnacraig; Mr Martin of Auchendennan; Mr Maxwell, yr. of Munches; Mr Middleton, Clay of Allan; Mr Sinclair Scott, Burnside; Mr Walker, Portlethen; Principal Williams.

The business chiefly consisted in arranging matters for the annual meeting. The grant of £50 was renewed to the Chair of Forestry, subject to the approval of the general meeting. A premium of £7, 7s. was awarded to Mr R. S. M'Dougall for a paper on the Pine Geometer Moth.

PROCEEDINGS AT GENERAL MEETINGS.

GENERAL MEETING, 17TH JUNE 1896.

Sir G. GRAHAM MONTGOMERY of Stanhope, Bart., in the chair.

NEW MEMBERS.

212 noblemen and gentlemen were balloted for and elected members of the Society.

OFFICE-BEARERS.

The following noblemen and gentlemen were appointed: *President*—Lord Blythswood. *Vice-Presidents*—The Marquis of Ailsa; the Earl of Home; Sir M. R. Shaw Stewart of Greenock and Blackhall, Bart.; Sir James Bell, Lord Provost of Glasgow. *Ordinary Directors*—John Speir, Newton Farm; Geo. Dun, Easter Kincaple; David Wilson, yr. of Carbeth; John Dobbie, Campend; W. H. Lumsden of Balmedie; Robert F. Dudgeon of Cargen; John Macpherson-Grant, yr. of Ballindalloch; Walter Elliot, Hollybush. *Extraordinary Directors*—J. C. Hope Vere of Blackwood; Colonel Sir David Carrick Buchanan of Drumpellier, K.C.B.; R. K. Stewart of Murdostoun; Thomas Valentine Smith of Ardtornish; A. A. Speirs of Elderslie; D. T. Martin of Girgenti; J. W. Stuart, Rothesay; J. M. Hannah, Girvan Mains; William Taylor, Park Mains; James Weir, Sandilands; John Gilmour of Montrave; W. S. Ferguson, Pictstonhill; Geo. R. Glendinning, Hatton Mains; W. J. Maxwell, yr. of Munches; R. Sinclair Scott, Burnside; George J. Walker, Portlethen; R. Shirra Gibb, Boon; Sir Robert Menzies of Menzies, Bart.; Jonathan Middleton, Clay of Allan; John Scott Dudgeon, Longnewton.

The CHAIRMAN intimated the resignation of Sir William Stuart Walker, K.C B., as Treasurer. Sir William took an intense interest in the affairs of the Society so long as he was able to fulfil his duties, and they all very much regretted losing Sir William's services. It now fell to him, in the name of the Directors, to suggest to this meeting that Sir William's successor should be Sir James Gibson-Craig. They all knew Sir James exceedingly well, and they also knew that he took a great interest in agriculture generally, and in the affairs of the Society in particular. He had great pleasure in moving that Sir James Gibson-Craig be appointed Treasurer.

The motion was adopted unanimously.

Mr JAMES HOPE proposed that Captain Hope of Bridge Castle be elected a Director for the Edinburgh Show district in room of Sir James Gibson-Craig. Agreed.

PERTH SHOW, 1896.

The Rev. JOHN GILLESPIE, in the absence of the Convener of the Shows Committee, reported that the arrangements were well advanced for the Show to be held at Perth on the 21st July and three following days. The display of implements would be very similar to that at recent Shows. As to live stock, nothing definite could be said, for the entries had closed only that forenoon. It was fully expected, however, that the collection would be large and representative. A novel feature in the Show will be the exhibition of horseless carriages, which, he was sure, would excite a great deal of interest. The Society had to thank the city of Perth for a most admirable site for the Show, and they were much indebted to Lord Provost Dewar, the Magistrates, Town Council, and town officials of Perth, for most kindly efforts in promoting the success of the Show. Then, in a very special sense, the Society was indebted to the County Councils of Perth, Fife, Forfar, and Kinross, for every one of these had, by voluntary assessment, raised a fund in aid of the Show. Nothing further, except favourable weather, was required to ensure a brilliant success for the Perth Show of 1896.

GLASGOW SHOW, 1897.

The Rev. JOHN GILLESPIE stated that arrangements had been completed for holding the Show of 1897 in the city of Glasgow. Efforts were being made to obtain a visit from his Royal Highness the Prince of Wales, and he knew how anxious the people of Scotland were to see his Royal Highness coming amongst them at the time of their annual national Show. The Corporation of Glasgow had been good enough to give a free site for the Show on the Glasgow Green, and also vote a contribution of £250 towards the funds of the Show. He was glad to say that in the Glasgow district, as in the districts of Perth and Dumfries, the County Councils had in the most handsome manner followed the example of the old Commissioners of Supply in raising sums in aid of the Show by means of voluntary assessments. Already the County Councils of Lanark, Renfrew, Argyll, and Bute had intimated liberal contributions, and he could not for a moment doubt that the county of Ayr would do likewise. The contribution from Lanarkshire would amount to £800, that from Renfrew £151, and that from Argyll £100.

Mr ALEX. GLENDINNING, Newmains, said, in connection with the report of the Glasgow Show, he desired to ask a question with regard to the visiting of the Glasgow Show by the Prince of Wales. Mr Gillespie, with his usual business-like qualities, had so far anticipated him, but he (Mr Gillespie) would perhaps excuse him when he said that the allusion which he had made with regard to this matter was rather vague. It would be in the recollection of the members of the Society that at the general meeting in January last the Directors promised that efforts would be made to induce his Royal Highness to visit the Show at Glasgow next year. They now desired to have some information from the Directors as to the steps which had been taken to effect this, and especially if there was any prospect of his Royal Highness honouring the Show in question by his presence. There was a very strong and widespread feeling amongst the agriculturists of Scotland that the time had come when they should expect a much larger share of Royal patronage for their Show. Scottish agriculturists observed with pleasure the active interest which his Royal Highness takes in the affairs of the Royal Agricultural Society of England. It was a fact that, without fail, every year the Royal English Society was visited by a member of the Royal Family—generally, indeed, by the Prince of Wales himself. When they reflected what the Highland Society had been, and was, in the development of agriculture, and what success had marked its progress, and when they remembered that never yet had his Royal Highness honoured Scotland by paying a visit to this, her national Show, he thought it would be admitted that the agriculturists of Scotland were not unreasonable in now making an appeal to his Royal Highness to signalise and encourage their efforts by paying a visit to the Show in 1897. It had been reported that the chief reason why the Prince of Wales had not yet visited the Highland Show was that the Show clashed with other engagements which press upon him. He would humbly suggest that the Directors make a very special effort to induce his Royal Highness to patronise the Glasgow Show next year, and with a view to this he hoped they would consider whether they might not, to some extent, alter the date of the Show so as to suit the convenience of his Royal Highness.

Rev. JOHN GILLESPIE said it fell to him to make a brief explanation. The Board, as intimated in the report he had just read, were aware of the widespread desire that his Royal Highness should pay an official visit to the national Show of Scotland, though unfortunately their wishes had not hitherto been realised. Bearing this in mind, the Directors had already indirectly, and in proper ways, been bringing the matter before his Royal Highness. There were difficulties in the way, more particularly as, incidentally referred to by Mr Glendinning, that at the particular season when the Show is usually held the demands made upon his Royal Highness were extremely extensive. Fortified by what had been said so ably by Mr Glendinning, and by the way in which his remarks had been received, he was sure that the Board would take steps to widen the period during which the Show might be held, so as, if possible, to suit the convenience of the Prince of Wales. He was quite sure that they might rely confidently upon the active help of the President and President-elect of the Society, as well as other noblemen and gentlemen in the country, in this matter.

SHOW OF 1898.

The Rev. JOHN GILLESPIE stated that it had been arranged that, provided satisfactory arrangements can be made financially and otherwise, the Show of 1898 will be held in the Border district. The towns of Melrose, Hawick, Kelso, and Berwick were contesting keenly for the site of the Show, and he hoped that rivalry augured well for the success of the Show, as it certainly spoke well for the popularity of the Society in that part of the country. He commended to the County Councils of the Border districts the good examples of the County Councils in the Glasgow, Perth, and Dumfries districts, and he had no doubt that in the Borders their national Show would be as liberally supported by the county authorities as it had been in these other districts.

CHEMICAL AND BOTANICAL.

Mr HUTCHESON, Beechwood, said that no detailed report had to be submitted at this time as to the work of the Chemical and Botanical Departments of the Society. The scheme of work approved at the January meeting last year had been faithfully followed out by the Committee, and he could assure the meeting that the Committee were most anxious to have the work of this department carried out as efficiently and economically as possible. The experiments on feeding and manuring explained at last general meeting were proceeding, and it was fully expected that the former—in particular the feeding experiments with cattle and sheep—will prove to be of the greatest practical value. The results of the experiments now going on will appear in next volume of the 'Transactions.'

AGRICULTURAL EDUCATION.

The SECRETARY reported that the annual examination of candidates for the Society's diploma and certificate was held on 7th, 8th, 9th, and 10th April. The number of candidates who came forward was 29, and the result was—10 obtained the diploma and 4 the certificate.

The SECRETARY also announced that the £10 given in prizes to the class of Agriculture in the University of Edinburgh had this year been equally divided among the following two students—viz.: A. Allsebrook, Wollaton, Notts; D. Chalmers, Gillespie, Glenluce.

FORESTRY DEPARTMENT.

Sir ROBERT MENZIES reported that the Forestry examinations were held on the same days as those for the agricultural diploma, when ten candidates presented themselves, with the result that one obtained the first-class and two the second-class certificate.

'TRANSACTIONS.'

Rev. JOHN GILLESPIE, in formally laying before the meeting the current volume of the Society's 'Transactions,' said he might congratulate the Society on the admirable volume which had been produced. Very seldom, indeed, had the press and private individuals expressed stronger approval of the book. They might congratulate themselves on having the services of such a Secretary as Mr Macdonald, who, while carrying out the various other duties of his office so efficiently, managed the 'Transactions' in the way he had done.

THE PUBLIC HEALTH BILL.

Mr PETER FYSHE, Newtonlees, Dunbar, drew attention to the Public Health Bill, in so far as it concerned the matter of laying down manure on fields within 50 feet of the public road. He said he wished particularly to draw attention to the definition of the term "farmyard manure." It was generally understood to mean manure made about a farm place, and he would like to see stable and byre manure, made in the city, put under the same class. They wished such manure definitely classed as similar to farmyard manure, and that police manure only should come under the scope of the Act.

Mr JOHN DOBBIE, Campend, said there were many farmers who used very little farmyard manure. According to the reading of the bill as it at present stood, those farmers who, like himself, used very little except farmyard manure, would require to be supplied with a set of tramways for every field. In his own case there were four public roads running through his farm, bisecting almost every field, and the enforcing of the bill would cause the greatest inconvenience—in fact, it would almost be an impossibility to properly deal with the manure. He suggested that the law should stand as it is, merely inserting the words, "refuse or manure other than farmyard manure," for "police or city refuse."

Captain CLAYHILLS HENDERSON suggested that the word "temporary middens" should be used. That would include everything.

Rev. JOHN GILLESPIE said it would be in the recollection of the members of the Society that the Board dealt with this question some time ago, and they addressed a remonstrance to all members of Parliament as to the terms of the bill as originally prepared. Unfortunately the change made was not satisfactory from their point of view as agriculturists. It would be very difficult to get a special meeting of the Board to deal with the question, and he therefore moved that the standing orders be suspended so that a resolution might at once be moved and action taken.

This was agreed to, and it was remitted to the following Committee to draw up and prepare a resolution to be sent to the Government—viz., Mr Dobbie withdrawing his motion: Rev. John Gillespie; Master of Polwarth; Messrs Hutcheson, Dobbie, Fyshe, Connell, and Scott Dudgeon.

GENERAL MEETING IN THE SHOWYARD AT PERTH, 22D JULY 1896.

The Most Noble the MARQUIS OF BREADALBANE, K.G., President of the Society, in the chair.

Mr DUTHIE moved that the cordial thanks of the Society should be given to the Lord Provost, Magistrates, and Town Council of Perth for their assistance and co-operation in furthering the success of the Show, and especially for the use of the South Inch.

Mr ELLIOT, Hollybush, seconded the motion, which was cordially adopted.

Lord Provost DEWAR, in acknowledging the vote of thanks, said it was with great satisfaction that they had been able to place their resources at the disposal of the Society. He spoke not only for the Corporation, but for the whole community, who were desirous of doing everything they could to make the Society welcome and make the Show a success.

The MASTER OF POLWARTH proposed that the cordial thanks of the Society should be given to the subscribers to the local fund and the donors of special prizes for the liberal support they had given to the Society. The Society, he said, was greatly indebted to this district and the city of Perth for the support and help they had received. The County Councils had given the voluntary assessment that used to be afforded in the olden days by the Commissioners of Supply, and he hoped that whatever might happen as to local rates, that this voluntary assessment might be given freely and with greater cheerfulness than any other assessment that might be paid by the hard-pressed ratepayers. The Society was also indebted to those who had given special prizes, and he hoped the districts would follow the example of Perth in this respect.

Mr ALEX. CROSS of Knockdon seconded the resolution, and it was unanimously adopted.

Mr A. M. GORDON of Newton moved that the thanks of the Society should be given to Lord Balvaird, the Convener, and the other members of the local Committee for the assistance they had rendered in carrying out the arrangements in connection with the Show. Very much depended upon the energy and exertions of a local Committee. Without a good Local Committee, and especially an energetic and hard-working Convener, the Secretary of the Society would find himself at great disadvantage when he began to visit the locality in which the Show was to be held. He was assured by Mr Macdonald that he was indebted to Lord Balvaird for the great help rendered by his Lordship, who had assisted in every possible way in carrying out the arrangements for the Show. They owed his Lordship a debt of gratitude, and they hoped that they might soon find him in the high position of President of the Society.

The motion was seconded by Mr MARTIN of Auchendennan, and cordially adopted.

Lord BALVAIRD asked to be allowed to thank the Society for their kind expression of feeling. On behalf of the local Committee, he might say that their labours were not only light and extremely pleasant, but whatever they did was entirely a labour of love.

On the motion of Lord Provost DEWAR, seconded by Sir RALPH ANSTRUTHER, the railway companies were thanked for the invaluable assistance they had rendered in connection with the Show.

Mr **James A. Rollo**, Perth, moved that it should be remitted to the Directors to consider the working of rule 46 with regard to the clipping of sheep, with the object of preventing the retaining of old wool on sheep. He wished to point out that the rule was frequently disregarded, and that sheep were shown that were not eligible for prizes. He hoped the Directors would take up the matter soon, and remedy this most unsatisfactory state of things in the early future.

Mr **Hamilton**, Leithenhall, seconded, remarking that some of the sheep had two or even three fleeces on them.

Rev. **John Gillespie** replied that the Board would accept this motion with the greatest cordiality. He could assure Mr Rollo that the Board would give the matter the most careful and deliberate consideration, as they did with every suggestion brought before them.

Mr **Wilson**, Manswraes, asked how it happened that the date of the Show was a week earlier than usual. Another matter on which he desired information was as to why only one judge had been appointed this year for Ayrshire cattle, while in other sections there were two judges?

Rev. **John Gillespie** pointed out that the date of the Show was only two days earlier than last year. With regard to the judges, the Directors had no hard-and-fast rule as to the number of judges appointed to officiate in any particular class. If he were interested in Ayrshires he would think it was a great compliment to have only one judge, because it showed that one Ayrshire man was supposed to be equal to any other two men in the yard.

Mr **Wilson** said he was sorry to trouble the meeting, but as one of the oldest exhibitors at the Show he thought he had a claim to be heard on this matter. He had exhibited for over thirty years, but this year he had refrained from entering because he thought the Ayrshire exhibitors had not been treated on the same lines as the other exhibitors. What class of animals, he asked, had done more for the benefit of the country, and for the benefit of the landlords and the tenants, than Ayrshires? He did not think that the course that had been adopted in regard to them was right. The Ayrshires should get the same treatment as others. He thought they should have three judges in all the classes. In regard to the prize-money, he wished to know how it happened that the Society, which was now larger than ever it was before, was paying a very much less amount of prizes than it did when it was not in so good financial circumstances. They used to give £15 as the first prize for Ayrshires, and for Clydesdales about £30. The prizes had now been cut down to nearly one-half, and it did not pay exhibitors to come even though they won the first prize. He expressed the hope that the Directors would take these matters into consideration, and not only give more prize-money, but also give Ayrshire exhibitors better treatment.

Rev. **John Gillespie** said the Board would reconsider the whole question of the money-prizes to be given. Mr Wilson must remember that although the Society had now a very much larger capital fund than ever they had, yet the annual revenue from the fund was less than it was a few years ago owing to the fall in the rate of interest. If the Directors could see their way to increase the prizes, he had no doubt they would do so during the coming year; but possibly the subject might be open to the view that the increase should come, not by increasing the amount of the first and second prizes, but by giving a larger number of prizes in classes where there was a large entry, especially of young animals. That was his individual impression. The Board would give the matter their most careful consideration during the current year.

Mr **Macpherson Grant** proposed a vote of thanks to the chairman.

The motion was adopted by acclamation.

Lord Breadalbane, in acknowledging the vote, said he was deeply sensible of the honour which the Society had conferred upon him in appointing him their President this year. He was sure that he expressed the feelings of the members of the Society when he said that they felt it a very great honour that her Majesty should have condescended to exhibit at their Show, and that they were all pleased that the Queen should have sent two animals and received two prizes. It was gratifying to see how well the drawings had come out on the first day of the Show in spite of the very wet weather. He believed that in point of numbers the exhibits were not so numerous as on former occasions, but he thought every one who took the trouble to go round the showyard must agree that the quality was very much in excess of that of many former occasions. Individually, he was very much indebted to their worthy friend Mr Macdonald, the Secretary, for the assistance he had rendered in connection with the Show, and his Lordship took the opportunity of tendering to him his sincere thanks for the aid he had given him. The facilities afforded by the railway companies had been mentioned, and Sir Robert Menzies had made a humorous reference to their proximity to the railway. As a Director of the Caledonian Railway Company, he could say that if they would come to them when they whistled they should be only too delighted.

The meeting then separated.

ANNIVERSARY GENERAL MEETING, 20TH JANUARY 1897.

The Right Hon. LORD BLYTHSWOOD, President of the Society, in the chair.

NEW MEMBERS.

Eighty-four candidates were balloted for and duly elected.

FINANCE.

Sir JAMES GIBSON-CRAIG, hon. Treasurer, had great pleasure in submitting the Accounts for the past year. The gross receipts for the year amounted to £12,864. Including the sum of £947 received as life subscriptions during the year, there is a credit balance of £4032. This result was mainly due to the remarkable success of the Perth Show, but was also contributed to by the fact that in 1896 the receipts from members' subscriptions were unusually large—greater than in any former year, with the exception of the centenary year. This was a most satisfactory report, and it required no further words of his to commend it.

The report was adopted.

ARGYLL NAVAL FUND.

Sir ROBERT MENZIES submitted the Accounts of the Argyll Naval Fund for 1895-96, which showed that the income for the year amounted to £241, 0s. 2d., while the expenditure was £200, made up by a grant of £40 to each of five naval cadets. During the past year there had been no vacancy in the list of those receiving grants.

PERTH SHOW, 1896.

Sir JAMES GIBSON-CRAIG submitted the report on the Show of 1896 held at Perth. In a financial sense the Show had been successful, far beyond the most sanguine expectations. The Accounts exhibited a profit on the Show of about £2511. For that handsome result the Society was largely indebted to the enthusiastic and liberal support received from the locality, especially from the town of Perth and the County Councils in the Show district. The town of Perth had provided an ideal site, free of charge, and the Lord Provost and other members of the Corporation had given most cordial support in every way. Rain fell heavily on the opening day, but thereafter the weather was highly favourable. Then, as the result of somewhat extensive and friendly negotiations between the Society and the Scotch railway companies, the railway facilities and inducements were, perhaps, greater than on any former occasion. How very freely the public availed themselves of these facilities is as well known to the railway companies as to the Society, and it is to be hoped that, after their happy experience in connection with the Perth Show, the companies may see their way to offer still greater inducements to the public to visit the future Shows of the Society. He desired especially to acknowledge the help given by Mr Steel, the new manager of the Highland Railway. The show of live stock was small, but of a very high character. There was an excellent display of implements and machines. The Directors very much regret that an otherwise successful meeting was marred by the failure of the arrangements for providing refreshments in the showyard; and, recognising the great difficulty and importance of this matter, they have appointed a special Committee to consider very fully and carefully as to the providing of better catering arrangements in the Glasgow Show.

This report was adopted.

GLASGOW SHOW, 1897.

Sir JAMES GIBSON-CRAIG reported as to the arrangements for the Show of this year, to be held at Glasgow on the 6th July and three following days. The Directors had almost completed the preparation of the prize-list, and they had resolved to increase the amount given in prizes by no less than about £550. The great success which had attended the Shows of the Society in the last few years had enabled the Directors to make that large increase to the prize-money, and they trusted that success would be fully maintained in the Shows of the future. He was glad to be able to say that the Society is receiving very cordial support towards the Show from the Show district. The Corporation of Glasgow had not only given a free site on the Glasgow Green, but also voted a contribution of £250; while all the County Councils in the district had resolved to contribute sums raised by means of voluntary assessments on owners of lands and heritages. The Board regret that all efforts to secure the presence of Royalty had proved unavailing, but they trust they may be more successful when the Show is held in Edinburgh. The Directors had appointed a Committee to consider as to the providing of better catering arrangements in the showyard; and it had been resolved to still further increase the facilities afforded to members of the Society by providing for them a commodious pavilion, with lavatories and cloakroom attached. The Directors would spare no effort to ensure that the Show would be a credit to the Society and a success in every respect. He hoped the Show of 1897 would prove an exception to the general experience of the Society at Glasgow. It was twenty-two years since they had a balance on the right side at the Glasgow Show.

Mr Archd. M'Neilage, before the motion for the adoption of this report was passed, called attention to the grievance of the exhibitors of Ayrshire cattle who would be debarred from showing on account of the late date at which the change of the time of holding the Show was resolved upon. He thought these exhibitors had a valid ground of complaint, because the consent given by the General Meeting last year did not cover the alteration of the date of the Show, except in so far as that might be necessary to secure the attendance of a member of the Royal Family. But advantage was taken of this modified consent to alter the date on quite other grounds, and while he would deprecate any further change at this last stage, he certainly thought the change made bore somewhat hardly on those who had cattle timed to calve for the usual date, and would now have to keep their cattle at home, or exhibit at a great disadvantage.

Sir **James Gibson-Craig** explained, in reply, the circumstances under which the change of date had been resolved upon. The Board were extremely sorry if breeders were put to any inconvenience by the change made. As, however, the Ayrshires had two cow classes—one for cows in calf, and one for cows in milk—he could not see that there would be such a great hardship by a few days' alteration in the date of the Show. They could be shown in either class as it suited the date of calving. The Directors had been puzzled by the fact that the Glasgow Shows had been so disastrous financially, and they were advised that it was due to the fact that the Shows had come immediately after the Fair holidays. They had therefore arranged to go in front of the holidays this year. He rather thought Mr M'Neilage laid down a law about the date of the Show which they could not accept. The Directors would require to have a free hand to make the date as suitable as possible for the country at large, and in the present case they thought they had good reasons for making the alteration.

Border Show, 1898.

Sir **James Gibson-Craig** stated that it had been decided to hold the Show of 1898 in the Border district. He was glad to be able to say that all the County Councils in the district had been good enough to resolve to raise a sum in aid of the Show by means of a voluntary assessment, and it was expected that a considerable sum would otherwise be raised in the locality. The towns of Berwick, Kelso, Melrose, and Hawick were competing for the privilege of a visit from the Society, and a Committee of the Board of Directors would visit these towns on Monday and Tuesday next, with the view of obtaining information which would assist the Board in deciding as to where the Show should be held.

Show of 1899.

It was unanimously agreed to affirm the resolution of the Directors that the Show of 1899 be held in Edinburgh, provided satisfactory financial and other arrangements can be made.

District Shows and Cottages and Gardens, Etc.

The **Master of Polwarth** submitted the report on district competitions, showing that in 1896 278 districts participated in grants of money and medals, involving a total expenditure of £329, 14s. 2d. For the current year the Directors proposed the following grants: (1) Under section 1, sixteen districts for grants of £12 each for cattle, horses, and sheep, and three districts in intermediate competition, with a grant of three medals to each; (2) under section 2, six districts for grants of £15 each for stallions; (3) twenty-four districts, two medals each; (4) ploughing competitions, 200 medals; (5) cottages and gardens, twenty districts, two medals each. The Board also recommend the following special grants—viz., £40 to the Highland Home Industries and Arts Association, £20 to the Kilmarnock Dairy Produce Show, £5 to Shetland Agricultural Society, and £3 to Orkney Agricultural Society. The total sum recommended to be given in 1897 amounts to £420, 13s.

This report was adopted.

CHEMICAL AND BOTANICAL.

Mr **DAVID WILSON**, yr., of Carbeth, in submitting the report, said: "It will be seen from the abstract of the accounts for the past year that the Committee have kept well within the limit of expenditure sanctioned by the General Meeting in 1895—viz., £450. Indeed, the actual outlays on chemical and botanical work in the past year is not much over £300, and £100 of that is received from Government. The chief experimental work in which the Society has been engaged during the past year are feeding experiments with cattle at Mains of Laithers, and with sheep at Ferney Castle and Whitelaw farms. The results of these experiments will be published immediately in the 'Transactions.' The Directors have resolved to continue these experiments during the present winter, and they have now been set agoing—50 cattle being fed at Mains of Laithers, and 80 sheep at Ferney Castle and Whitelaw farm respectively. A special Committee of Directors has been appointed to superintend these experiments. A very useful series of experiments upon the effects of foods on milk and butter has been conducted for the Society by Mr Speir, Newton, Glasgow, and it is probable that these will be carried still further. It has also been resolved to try the effect of nitragin, a substance developed in Germany, which contains the microbe that is instrumental in causing the growth of nodules upon the roots of leguminous plants, and to whose presence in the soil the power which leguminous plants possess of assimilating the free nitrogen of the air is attributed. Samples of this nitragin will be applied in various parts of the country to the clover crop, the bean crop, and to vetches. The investigation into the cause of clover-sickness will also occupy the attention of the department in the coming season, and a field well suited for the purpose has been selected on the farm of Mr Somervell, Green Dykes, Chirnside. The experiment on Green Dykes, Macmerry, to determine the usefulness or otherwise of salt as a means of preventing lodging, have not been so successful as was anticipated. Salt was applied to a 10-acre field, upon areas of 1 acre each in duplicate, on three different periods—viz., during the winter, shortly before sowing, and as a top-dressing. Unfortunately the severe storms of wind and rain laid nearly the whole area flat, but it was noticed that the areas which stood longest were those to which the salt had been applied during the winter. Although the subject does not come strictly within the operations of the Science Committee, it may be appropriate enough to refer here to steps which the Directors have taken with the view of securing the more effective and useful working of the Fertilisers and Feeding Stuffs Act, 1893. A special Committee of the Board made a careful and exhaustive inquiry as to the working of the Act, submitted a report on the results of that inquiry to the Board of Agriculture, County Councils, and local analytical and agricultural associations, and in October last had a long interview with the President of the Board of Agriculture as to the amending of the Act and the regulations for its working. He was glad to say good results were likely to follow the action taken, for it was known that the Board of Agriculture would shortly issue a new set of regulations, which, it was believed, would be in several respects better than the original regulations. These would specially refer to sampling. The secretary of an association would be allowed to take samples for the members, and thereby greatly facilitate the work.

Mr **ALEX. GUILD**, Greenhead, offered one or two friendly criticisms before the report was passed. Two years ago he had called attention to the amount expended, and it was said that it would be reduced by about £100. That promise had been most loyally kept. In 1896 the expenditure was £100 below that of 1895, but in the estimate for 1897 there was a reversion to the figures for 1895. The expenditure in that year was £381; in 1896, £288; but the estimate for 1897 is £410. He was far from saying that the Chemical Department might not yield results of practical value to the farming community. He observed that they were going to conduct investigations into this new fertilising matter—nitragin. This could be by no means an original inquiry. The subject had been thrashed out in 1894. Nitragin was tested by Dr Somerville at the Durham College, and was found to be of no use whatever. He asked one or two questions about the administration of the department. What portion of the allowance went to the Botanical and what to the Chemical section? Since the passing of the Fertilisers Act an analysis could be had in the counties for 5s., whereas an analysis from the Chemist of the Highland Society cost 10s. to a member. The Chemist here had a retaining fee, and his services should surely be as easily available as those of a County Council analyst.

Mr **WILSON** said, in reply, that with regard to nitragin the whole amount spent in purchasing the material was about £6, and there would be little additional outlay. He was not very sanguine about the utility of nitragin himself, and many of the Committee were doubtful. It might help the farmers in the way of growing beans and clover, and the sum mentioned was not much to spend to see whether that would be so or not. As for the charges for analyses, if the figures quoted were correct, he would say by all means go to the County Council analyst. Some money laid aside for botanical investigation had not been used, as Mr M'Alpine's time had been too fully occupied in the West.

Mr **Guild** expressed himself as quite satisfied with this explanation.

BOTANICAL REPORT.

The **Secretary**, in the absence of Mr M'Alpine, submitted the botanical report for the year as follows:—

I have the honour to report that during the past season I have examined the purity and germinating power of 160 samples of clover and grass seeds.

Clovers.—The *purity* of the clovers examined was always high, varying between 98 and 100 per cent. The *germinations* were as follows:—

	Maximum germination. Per cent.	Minimum germination. Per cent.
Red clover or cow-grass	98	86
Alsike clover	99	85
White clover	98	77
Trefoil	99	90

Grasses.—The *purity* of the grasses examined was usually very high, varying from 98 per cent to 100 per cent. In some cocksfoot samples the purity was as low as 90 per cent; in some tall fescues, 91 per cent; and in meadow foxtails, 90 per cent. The *germinations* were as follows:—

	Maximum germination. Per cent.	Minimum germination. Per cent.
Perennial ryegrass	98	90
Italian ryegrass	97	70, and in 1 sample 51
Timothy	100	90
Cocksfoot	96	60
Meadow fescue	99	95
Tall fescue	88	77
Hard fescue	85	65
Meadow foxtail	70	60
Crested dogstail	92	80

FORESTRY.

Sir **Robert Menzies**, Bart., stated that subscriptions towards the endowment of a Chair of Forestry in Edinburgh University were but slowly coming in. From an appeal issued in September last to a large number of landed proprietors and others throughout the country, only about £75 had been received. He asked for a renewal of the grant of £50 for the current year towards the Forestry Lectureship in the University of Edinburgh. They had good teachers in Scotland, but they were most miserably paid. He was going to have a meeting of Committee in February, and he meant to propose that they celebrate her Majesty's diamond reign by a Forestry Exhibition.

The grant for £50 was unanimously voted.

EDUCATION.

Rev. **John Gillespie**, on behalf of the Committee, recommended that the grant of £60 to the Scottish Dairy Institute be renewed for the current year. He also stated that the examinations for the Society's diploma and certificate in Agriculture and certificates in Forestry had been fixed to take place on Monday, 5th April, and four following days.

Mr **Hedley Smith**, Whittinghame, asked some questions in regard to the constitution of the Edinburgh School of Rural Economy.

Mr **Gillespie** explained the management of the School, but referred Mr Smith for full details to the Secretary, who was Secretary of the School of Rural Economy also.

The report was adopted, as was also a verbal report on "Publications," by Mr Gillespie.

VETERINARY.

The **Secretary** reported, on behalf of Principal Williams, that he had completed his report on louping-ill, which would be published in the 'Transactions.' He did not think it would be needful to prosecute the inquiry further in the meantime.

Mr **Macpherson Grant** having moved a vote of thanks to Lord Blythswood for presiding, the meeting separated.

APPENDIX (A)

PREMIUMS

OFFERED BY

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND IN 1897.

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GENERAL NOTICE.

THE HIGHLAND SOCIETY was instituted in the year 1784, and incorporated by Royal Charter in 1787. Its operation was at first limited to matters connected with the improvement of the Highlands of Scotland; but the supervision of certain departments, proper to that part of the country, having been subsequently committed to special Boards of Management, several of the earlier objects contemplated by the Society were abandoned, while the progress of agriculture led to the adoption of others of a more general character. The exertions of the Society were thus early extended to the whole of Scotland, and have, for the greater part of a century, been directed to the promotion of the science and practice of agriculture in all its branches.

In accordance with this more enlarged sphere of action, the original title of the Society was altered, under a Royal Charter, in 1834, to THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

The leading purposes of the Institution are set forth in the following pages, where it will be found that Premiums are offered for Reports on almost every subject connected with the cultivation of the soil; the rearing and feeding of stock; the management of the dairy; the improvement of agricultural machinery and implements; the growth of timber; the extension of cottage accommodation; the application of chemical science; and the dissemination of veterinary information.

Among the more important measures which have been effected by the Society are—

1. Agricultural Meetings and General Shows of Stock, Implements, &c., held in the principal towns of Scotland, at which exhibitors from all parts of the United Kingdom are allowed to compete.
2. A system of District Shows instituted for the purpose of improving the breeds of Stock most suitable for different parts of the country, and of aiding and directing the efforts of Local Agricultural Associations.
3. The encouragement of Agricultural Education, under powers conferred by a supplementary Royal Charter, granted in 1856, and authorising "THE COUNCIL of the HIGHLAND AND AGRICULTURAL SOCIETY ON EDUCATION" to grant Diplomas to Students of Agriculture; and by the establishment of Bursaries. The Bursaries were discontinued in 1892.
4. The appointment of a chemist for the purpose of promoting the application of science to agriculture, and to superintend local experiments.
5. The advancement of the Veterinary Art, by conferring Certificates on Students who have passed through a prescribed curriculum, and who are found, by public examination, qualified to practise. Now terminated in accordance with arrangements with the Royal College of Veterinary Surgeons.
6. The establishment of a Botanical Department.
7. The establishment of a Dairy Department.
8. The appointment of a Board of Examiners, and the granting of First and Second Class Certificates in Forestry.
9. The annual publication of the 'Transactions,' which comprehend papers by selected writers, Prize Reports, and reports of experiments, also an abstract of the business at Board and General Meetings, and other communications.
10. The management of a fund left by John, 5th Duke of Argyll (the original President of the Society), to assist young natives of the Highlands who enter Her Majesty's Navy.

CONSTITUTION AND MANAGEMENT.

The general business of THE HIGHLAND AND AGRICULTURAL SOCIETY is conducted under the sanction and control of the Royal Charters, referred to above, which authorise the enactment of Bye-Laws.

The Office-Bearers consist of a President, Four Vice-Presidents, Thirty-two Ordinary and Twenty Extraordinary Directors, a Treasurer, an Honorary and an Acting Secretary, an Auditor, and other Officers.

The Council on Education, under the Supplementary Charter, consists of Sixteen Members—Nine nominated by the Charter, and Seven elected by the Society. The Board of Examiners consists of Sixteen Members.

PRIVILEGES OF MEMBERS

MEMBERS OF THE SOCIETY ARE ENTITLED—

1. *To receive on application a free copy of the 'Transactions' annually.*
2. *To apply for District Premiums that may be offered.*
3. *To report Ploughing Matches for Medals that may be offered.*
4. *To Free Admission to the Shows of the Society.*
5. *To exhibit Live Stock and Implements at reduced rates.*[1]
6. *To have Manures and Feeding-Stuffs analysed at reduced fees.*
7. *To have Seeds tested at reduced fees.*
8. *To have Diseases affecting Farm Crops inquired into.*
9. *To attend and vote at General Meetings of the Society.*
10. *To vote for the Election of Directors, &c., &c.*

ANALYSIS OF MANURES AND FEEDING-STUFFS

The Fees of the Society's Chemist for Analyses made for Members of the Society shall, until further notice, be as follow:—

The estimation of *one* ingredient in a manure or feeding-stuff	5s.
The estimation of *two or more* ingredients in a manure or feeding-stuff . . .	10s.

These charges apply only to analyses made for the sole and private use of Members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

The Society's Chemist, if requested, also supplies valuations of manures, according to the Society's scale of units.

EXAMINING SEEDS, CROP DISEASES, &c.

The rates of charge for the examination of plants and seeds, crop diseases, &c., will be had on application to the Secretary.

ELECTION OF MEMBERS

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January and June. It is not necessary that the proposer should attend the Meeting.

CONDITIONS OF MEMBERSHIP

The ordinary annual subscription is £1, 3s. 6d., and the ordinary subscription for life-membership is £12, 12s.; or after ten annual payments have been made, £7, 7s. Proprietors farming the whole of their own lands, whose rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, are admitted on a subscription of 10s. annually, which may be redeemed by one payment of £5, 5s., or, after ten annual payments have been made, by one payment of £3, 3s.[2] Subscriptions are payable on election, and afterwards annually in January.

Members are requested to send to the Secretary the names and addresses of Candidates they have to propose (stating whether the Candidates should be on the £1, 3s. 6d. or 10s. list).

JAMES MACDONALD, *Secretary.*

3 GEORGE IV. BRIDGE, EDINBURGH.

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[1] Firms are not admitted as Members; but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.

[2] Candidates claiming to be on the 10s. list must state under which of the above designations they are entitled to be placed on it.

ESTABLISHMENT FOR 1896-97

President.

LORD BLYTHSWOOD, Blythswood, Renfrew.

Vice-Presidents.

Marquis of Ailsa, Culzean Castle, Maybole.
Earl of Home, The Hirsel, Coldstream.
Sir M. R. Shaw Stewart of Greenock and Blackhall, Bart., Ardgowan, Greenock.
Sir James Bell, Bart., Glasgow.

Ordinary Directors.

Year of Election.	
1893	Alexander Cross of Knockdon, 19 Hope Street, Glasgow.
	Captain Clayhills Henderson of Invergowrie, R.N., Dundee.
	W. T. Malcolm, Dunmore Home Farm, Larbert.
	Captain Robert Dundas, yr. of Arniston, Kirkhill, Gorebridge.
	William Duthie, Tarves, Aberdeenshire.
	James Lockhart, Mains of Airies, Stranraer.
	C. M. Cameron, Balnakyle, Munlochy.
	The Hon. The Master of Polwarth, Humbie House, Upper Keith.
1894	David M'Gibbon, Ardnacraig, Campbeltown.
	Andrew Hutcheson, Beechwood, Perth.
	John M. Martin of Auchendennan, Alexandria, N.B.
	James Hope, East Barns, Dunbar.
	Alexander M. Gordon of Newton, Insch, Aberdeenshire.
	Wellwood Maxwell of Kirkennan, Dalbeattie.
	J. Douglas Fletcher of Rosehaugh, Inverness.
	John Wilson, Chapelhill, Cockburnspath.
1895	Charles Howatson of Glenbuck, Glenbuck.
	Sir Ralph Anstruther of Balcaskie, Bart., Pittenweem.
	Robert Paterson, Hill of Drip, Stirling.
	Captain Thomas Hope of Bridge Castle, Westfield, Linlithgowshire.
	John Marr, Cairnbrogie, Old Meldrum.
	Rev. John Gillespie, LL.D., Mouswald Manse, Ruthwell, R.S.O.
	John Cran, Kirkton, Bunchrew, Inverness.
	C. H. Scott Plummer of Sunderland Hall, Selkirk.
1896	John Speir, Newton Farm, Newton, Glasgow.
	George Dun, Easter Kincaple, St Andrews.
	David Wilson, yr. of Carbeth, Killearn.
	John Dobbie, Campend, Dalkeith.
	W. H. Lumsden of Balmedie, Aberdeenshire.
	Robert F. Dudgeon of Cargen, The Grange, Kirkcudbright.
	John Macpherson Grant, Milton Cottage, Kingussie.
	Walter Elliot, Hollybush, Galashiels.

Extraordinary Directors.

Year of Election.	
1896	Col. Sir David Carrick Buchanan of Drumpellier, K.C.B., Coatbridge.
	D. T. Martin of Girgenti, Irvine.
	Thomas Valentine Smith of Ardtornish, Morvern, Oban.
	A. A. Speirs of Elderslie, Houston House, Johnstone.
	R. K. Stewart, Murdostoun Castle, New Mains, N.B.
	J. C. Hope Vere of Blackwood, Lesmahagow.
	J. Windsor Stuart, Bute Estate Office, Rothesay.
	J. M. Hannah, Girvan Mains, Girvan.
	William Taylor, Park Mains, Renfrew.
	James Weir, Sandilands, Lanark.
1895	John Gilmour of Montrave, Leven, Fife.
	W. S. Ferguson, Pictstonhill, Perth.
	George R. Glendinning, Hatton Mains, Kirknewton.
1896	W. J. Maxwell, yr. of Munches, Terraughtie, Dumfries.
	R. Sinclair Scott, Burnside, Largs.
	George J. Walker, Portlethen, Aberdeen.
	R. Shirra Gibb, Boon, Lauder.
1896	Sir Robert Menzies of Menzies, Bart., Camserney, Aberfeldy.
	Jonathan Middleton, Clay of Allan, Fearn, Ross-shire.
	John Scott Dudgeon, Longnewton, St Boswells.

Office-Bearers.

Sir James H. Gibson-Craig of Riccarton, Bart., *Treasurer.*
James Macdonald, F.R.S.E., *Secretary.*
Rev. Archibald Scott, D.D., *Chaplain.*
Andrew P. Aitken, D.Sc., 8 Clyde Street, *Chemist.*
William Home Cook, C.A., *Auditor.*
Tods, Murray, & Jamieson, W.S., *Law Agents.*
A. N. M'Alpine, 60 John Street, Glasgow, *Consulting Botanist.*
James D. Park, *Practical Engineer.*
John Macdiarmid, *Clerk.*
Edward M. Cowie, *Second Clerk.*
William Williams, F.R.C.V.S., *Professor of Veterinary Surgery.*
William Blackwood & Sons, *Printers and Publishers.*
Keith & Co., 65 George Street, *Advertising Agents.*
G. Waterston & Sons, *Stationers.*
Thomas Smith & Sons, 47 George Street, *Silversmiths.*
Alexander Kirkwood & Son, 9 St James' Square, *Medallists.*
John Watherston & Sons, *Inspectors of Works.*
William Simpson, *Messenger.*

Chairman of Board of Directors.

Rev. John Gillespie, LL.D.

Chairmen of Committees.

1. *Argyll Naval Fund* . .	Captain G. D. Clayhills Henderson.
2. *Finance, Chambers, and Law*	Sir James H. Gibson-Craig, Bart.
3. *Publications* . . .	Rev. John Gillespie, LL.D., Mouswald Manse.
4. *Shows*	Sir James H. Gibson-Craig, Bart.
5. *Science*	David Wilson, yr. of Carbeth.
6. *General Purposes* . .	Sir James H. Gibson-Craig, Bart.

COMMITTEES FOR 1896-97

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1. ARGYLL NAVAL FUND.

Capt. G. D. Clayhills Henderson of Invergowrie, R.N., Dundee, *Convener*.
Sir David Baird of Newbyth, Bart., Prestonkirk.
Sir Robert Menzies of Menzies, Bart., Camserney, Aberfeldy.
David M'Gibbon, Ardnacraig, Campbeltown.
John Maclachlan of Maclachlan, 48 Castle Street, Edinburgh.

2. FINANCE, CHAMBERS, AND LAW.

Sir James H. Gibson-Craig of Riccarton, Bart., *Convener*.
Rev. John Gillespie, LL.D., Mouswald Manse, Ruthwell, R.S.O.
G. R. Glendinning, Hatton Mains, Kirknewton.
John Scott Dudgeon, Longnewton, St Boswells.
Alexander Cross of Knockdon, 19 Hope Street, Glasgow.
A. M. Gordon of Newton, Insch, Aberdeenshire.
Captain Robert Dundas, yr. of Arniston, Kirkhill, Gorebridge.
John Dobbie, Campend, Dalkeith.
Hon. Secretary, *ex officio*.
William Home Cook, C.A., Auditor, *ex officio*.

3. PUBLICATIONS.

Rev. John Gillespie, LL.D., Mouswald Manse, Ruthwell, R.S.O., *Convener*.
Dr A. P. Aitken, 8 Clyde Street, Edinburgh.
R. G. Wardlaw Ramsay, Tillicoultry House, Tillicoultry.
John Scott Dudgeon, Longnewton, St Boswells.
John Speir, Newton Farm, Newton, Glasgow.
David Wilson, yr. of Carbeth, Killearn.

4. SHOWS.

Sir James H. Gibson-Craig of Riccarton, Bart., Currie, *Convener*.
John M. Martin of Auchendennan, Alexandria, N.B., *Vice-Convener*.
Sir Robert Menzies of Menzies, Bart., Camserney, Aberfeldy.
John Cran, Kirkton, Bunchrew, Inverness.
Walter Elliot, Hollybush, Galashiels.
Rev. John Gillespie, LL.D., Mouswald Manse, Ruthwell, R.S.O.
John Gilmour of Montrave, Leven.
W. H. Lumsden of Balmedie, Aberdeen.
John Marr, Cairnbrogie, Old Meldrum.
James Lockhart, Mains of Airies, Stranraer.
Jonathan Middleton, Clay of Allan, Fearn.
R. Sinclair Scott, Burnside, Largs.
W. S. Ferguson, Pictstonhill, Perth.
George Dun, Easter Kincaple, St Andrews.
Alex. M. Gordon of Newton, Insch, Aberdeenshire.
Alex. Cross of Knockdon, 19 Hope Street, Glasgow.
Andrew Hutcheson, Beechwood, Perth.
W. T. Malcolm, Dunmore Home Farm, Larbert.

G. R. GLENDINNING, Hatton Mains, Kirknewton.
J. D. FLETCHER of Rosehaugh, Inverness.
JAMES HOPE, East Barns, Dunbar.
C. M. CAMERON, Balnakyle, Munlochy.
CHARLES HOWATSON of Glenbuck, Glenbuck.
C. H. SCOTT PLUMMER of Sunderland Hall, Selkirk.
JOHN WILSON, Chapelhill, Cockburnspath.
WILLIAM DUTHIE, Tarves, Aberdeenshire.
ROBERT F. DUDGEON of Cargen, The Grange, Kirkcudbright.
WILLIAM TAYLOR, Park Mains, Paisley.
JOHN SPEIR, Newton Farm, Newton, Glasgow.
J. M. HANNAH, Girvan Mains, Girvan.
JAMES WEIR, Sandilands, Lanark.
JOHN DOBBIE, Campend, Dalkeith.
JAMES D. PARK, Engineer, *ex officio.*

5. SCIENCE.

DAVID WILSON, yr. of Carbeth, Killearn, *Convener.*
JONATHAN MIDDLETON, Clay of Allan, Fearn, Ross-shire, *Vice-Convener.*
G. R. GLENDINNING, Hatton Mains, Kirknewton.
R. SHIRRA GIBB, Boon, Lauder.
The Hon. The MASTER OF POLWARTH, Humbie House, Upper Keith.
W. S. FERGUSON, Pictstonhill, Perth.
GEORGE HENDERSON, Upper Keith.
JOHN SPEIR, Newton Farm, Newton, Glasgow.
JOHN SCOTT DUDGEON, Longnewton, St Boswells.
ANDREW HUTCHESON, Beechwood, Perth.
ALEX. CROSS of Knockdon, 19 Hope Street, Glasgow.
Rev. JOHN GILLESPIE, LL.D., Mouswald Manse, Ruthwell, R.S.O.
JOHN WILSON, Chapelhill, Cockburnspath.
Captain ROBERT DUNDAS, yr. of Arniston, Kirkhill, Gorebridge.
JOHN GILMOUR of Montrave, Leven, Fife.
JAMES HOPE, East Barns, Dunbar.
Sir RALPH ANSTRUTHER of Balcaskie, Bart., Pittenweem.
JOHN DOBBIE, Campend, Dalkeith.
Dr AITKEN, Chemist, *ex officio.*
A. N. M'ALPINE, Botanist, *ex officio.*
Professor WILLIAMS, *ex officio.*

6. GENERAL PURPOSES.

Sir JAMES H. GIBSON-CRAIG of Riccarton, Bart., Currie, *Convener.*
The Hon. The MASTER OF POLWARTH, Humbie House, Upper Keith.
G. R. GLENDINNING, Hatton Mains, Kirknewton.
ALEX. M. GORDON of Newton, Insch, Aberdeenshire.
Rev. JOHN GILLESPIE, LL.D., Mouswald Manse, Ruthwell, R.S.O.
JAMES HOPE, East Barns, Dunbar.
JOHN M. MARTIN of Auchendennan, Alexandria, N.B.
JOHN DOBBIE, Campend, Dalkeith.

The President, Vice-Presidents, the Treasurer, Honorary Secretary, and Chairman of Directors are members *ex officio* of all Committees.

General Meetings.—By the Charter the Society must hold two General Meetings each year, and, under ordinary circumstances, they are held on the third Wednesday of the months of January and June, at one o'clock, in the Society's Hall, 3 George IV. Bridge, for the election of Members and other business. Twenty a quorum.

By a resolution of the General Meeting on 15th January 1879, a General Meeting of Members is held in the Showyard on the occasion of the Annual Show. This year it will be held at Glasgow, on Wednesday, 7th July, at an hour to be announced in the programme of the Show.

With reference to motions at General Meetings, Bye-Law No. 10 provides—"That at General Meetings of the Society no motion or proposal (except of mere form or courtesy) shall be submitted or entertained for immediate decision unless notice thereof has been given a week previously to the Board of Directors, without prejudice, however, to the competency of making such motion or proposal to the effect of its being remitted to the Directors for consideration, and thereafter being disposed of at a future General Meeting."

General Show at Glasgow—6th, 7th, 8th, and 9th July.—Entries close for Implements, 3d May—Stock, Poultry, and Dairy Produce, 31st May.

Directors' Meetings.—The Board of Directors meet on the first Wednesday of each month from November till June inclusive, at half-past one o'clock P.M., and occasionally as business may require, on a requisition by three Directors to the Secretary, or on intimation by him. Seven a quorum.

Nomination of Directors.—Meetings of Members, for the purpose of nominating Directors to represent the Show Districts on the Board for the year 1898-99, will be held at the places and on the days after mentioned:—

1.	Edinburgh, 3 George IV. Bridge,	Wednesday, 16th Feb., at 2.
2.	Glasgow, North British Station Hotel,	Wednesday, 23d Feb., at 1.
3.	Stirling, Golden Lion Hotel,	Friday, 25th Feb., at 1.30.
4.	Perth, Salutation Hotel,	Friday, 4th March, at 2.
5.	Kelso, Cross Keys Hotel,	Friday, 11th March, at 12.30.
6.	Dumfries, King's Arms Hotel,	Wednesday, 16th March, at 1.
7.	Aberdeen, Imperial Hotel,	Friday, 18th March, at 12.
8.	Inverness, Caledonian Hotel,	Tuesday, 22d March, at 12.30.

The nomination of Proprietors or other Members paying the higher subscription must be made in the 2d, 6th, 7th, and 8th Districts; and the nomination of Tenant-Farmers or other Members paying the lower subscription, in the 1st, 3d, 4th, and 5th Districts.

Committee Meetings.—Meetings of the various Committees are held as required.

Examinations for the Society's Diploma and Certificate in Agriculture and Certificates in Forestry are fixed to be held as follows: Forestry written, 5th and 6th April; Agricultural written, 7th and 8th April; Oral, both subjects, 9th April.

AGRICULTURAL EDUCATION

CERTIFICATE AND DIPLOMA IN AGRICULTURE.

COUNCIL ON EDUCATION.

By a Supplementary Charter under the Great Seal, granted in 1856, the Society is empowered to grant Diplomas.

Members of Council named by Charter.

The President of the Highland and Agricultural Society—*President.*
The Lord Justice-General—*Vice-President.*

The Lord Advocate.
The Dean of Faculty.
The Professor of Agriculture.
The Professor of Anatomy.
The Professor of Botany.
The Professor of Chemistry.
The Professor of Natural History.

Members of Council nominated by Society.

The Master of Polwarth.
Sir James H. Gibson-Craig of Riccarton, Bart.
R. G. Wardlaw Ramsay of Whitehill.
W. J. Maxwell, yr. of Munches, Terraughtie, Dumfries.
Rev. John Gillespie, LL.D., Mouswald, Ruthwell, R.S.O.
John Marr, Cairnbrogie, Old Meldrum.
Alexander Cross of Knockdon.

Standing Acting Committee.

The Lord Justice-General—*Convener.*

The Professor of Agriculture.
The Professor of Botany.
The Professor of Chemistry.
Rev. John Gillespie, LL.D., of Mouswald.
R. G. Wardlaw Ramsay of Whitehill.

Board of Examiners.

Science and Practice of Agriculture.—Professor Wallace, University, Edinburgh; James Hope, East Barns, Dunbar; Jas. Biggar, yr. of Chapelton, Dalbeattie; Professor Wright, Glasgow and West of Scotland Technical College, 60 John Street, Glasgow; George R. Glendinning, Hatton Mains, Kirknewton; and James I. Davidson, Saughton Mains, Gorgie, Edinburgh.

Botany.—Professor A. N. M'Alpine, Technical College, 60 John Street, Glasgow, and R. S. M'Dougall, Edinburgh.

Chemistry, Physics, and Agricultural Chemistry.—Dr A. P. Aitken, Edinburgh, and Dr William Craig, Edinburgh.

Natural History.—Professor Cossar Ewart, Edinburgh, and J. A. Thomson, M.A., 11 Ramsay Gardens, Edinburgh.

Veterinary Science.—Professor Williams, Edinburgh; Finlay Dun, F.R.C.V.S., Edinburgh; Principal Dewar, Royal (Dick) Veterinary College, Clyde Street, Edinburgh; and Principal M'Call, Veterinary College, Buccleuch Street, Glasgow.

Field-Engineering.—David Alan Stevenson, C.E., Edinburgh, and A. W. Belfrage, C.E., Edinburgh.

Book-keeping.—William Home Cook, C.A., Edinburgh, and J. Wilson Brodie, C.A., Edinburgh.

The maximum number of marks in each subject is 100. In Agriculture, 75 marks qualify for Diploma and 60 for Certificate; in other subjects, 60 for Diploma and 40 for Certificate.

If a Candidate fail for the Diploma in Agriculture, or in more than two of the other subjects, he must take the entire Examination again; if he has obtained Diploma marks in Agriculture and failed in not more than two of the other subjects, he may come up again for examination in these subjects alone.

BYE-LAWS.

I. That, in terms of the Charter, the Society shall nominate seven members to act on the Council on Education.

II. That the Council shall appoint a Board of Examiners on the following subjects:—Science and Practice of Agriculture; Botany; Chemistry; Natural History; Veterinary Science; Field-Engineering; and Book-keeping.

III. That the examinations shall be both written and oral, and that the value of the answers shall be determined by numbers.

IV. That there shall be two examinations,[1] to be styled respectively the "First-Class Certificate Examination" and the "Diploma Examination."

V. That to pass the "First-Class Certificate Examination," a candidate must be acquainted with the science and practice of agriculture, botany, chemistry, natural history, veterinary science, field-engineering, and book-keeping; and that a certificate in the following terms, bearing the corporate seal and arms of the Society, signed by the President or Vice-President of the Council on Education and by the Secretary, shall be granted to candidates passing this examination:—

"These are to certify that on the   , A. B. was examined, and has been found to possess a knowledge of the science and practice of agriculture, botany, chemistry, natural history, veterinary science, field-engineering, and book-keeping."

VI. That to pass the "Diploma Examination," a candidate must possess a *thorough knowledge* of the science and practice of agriculture, botany, chemistry, natural history, veterinary science, field-engineering, and book-keeping; and that a diploma in the following terms, bearing the corporate seal and arms of the Society, and signed by the President or Vice-President of the Council on Education and by the Secretary, shall be granted to candidates passing this examination:—

"These are to certify that on the   , A. B. was examined, and has been found to be proficient in the science and practice of agriculture, botany, chemistry, natural history, veterinary science, field-engineering, and book-keeping."

VII. That each successful candidate for the Society's Agricultural Diploma shall thereby become eligible to be elected a free life member of the Society.

VIII. That a Standing Acting Committee of the Council on Agricultural Education shall be appointed by the Directors.

Note.—The names of Diploma Free Life Members will be found in the list of Members of the Society.

The list of those who, up till 1893, had obtained the First-Class Certificate appears in vol. v., fifth series (1893), of the 'Transactions.' The following have since obtained

---

[1] The examinations will be held in 1898 about the first week of April.

FIRST-CLASS CERTIFICATES.

1894. David Blair, Bankfoot, Inverkip.
1894. B. R. S. Prichard, Brislington, Bristol.
1895. Robert Allan, Halfway House, Whitburn.
1895. Wm. Cook Brackenridge, Agricultural College, Aspatria.
1895. David Dickinson, do. do.
1895. John Luker, do. do.
1895. David Donald, Whiteinch.
1895. F. J. Walkington, Greythorn, Kingstown.
1895. Sydney Edwards Pougnet, Edinburgh.
1896. J. I. Steel, 54 Cecil Street, Carlisle.
1896. James Wood, Grammar School, Darlington.
1897. John F. Blackshaw, Holly Bank, Marton, Chelford.
1897. David S. Bell, Auchtertyre, Coupar-Angus.
1897. Harold G. Brown, 7 Hughenden Terrace, Glasgow W.
1897. William Bruce, Tullo of Benholm, Johnshaven.
1897. John Camplin, Agricultural College, Aspatria.
1897. William Edwards, 242 Nantwich Road, Crewe.
1897. Samuel Fraser, Agricultural and Horticultural School, Holmes Chapel.
1897. Arthur C. Oldman, Agricultural College, Aspatria.
1897. Stanley Rackham, do. do.
1897. Daniel Robb, South Palmerstone, Ochiltree.
1897. John C. Rushton, Hilderstone, Stone, Staffs.
1897. Arthur Wm. Sheldon, Agricultural College, Aspatria.
1897. James Sim, The Temple, Drumlithie, Fordoun.
1897. J. Grant Smith, Inverallan, Grantown, N.B.
1897. William Taylor, Ninebanks, Allendale, Northumberland.
1897. Wm. Montgomery Tod, 11 Carlyle Road, Cambridge.
1897. David D. Williams, Agricultural College, Aspatria.

SYLLABUS OF EXAMINATION

FOR DIPLOMA AND CERTIFICATE.

I.—SCIENCE AND PRACTICE OF AGRICULTURE.

1. *Geology.*—Geological strata—surface geology—formation of soils—their classification—physical characters and composition—suitability for cultivation.

2. *Drainage, &c.*—The principles on which drainage, irrigation, and warping operations should be based and carried out.

3. *Top-dressing.*—The application of lime—marl—clay, &c.

4. *Rotations.*—The principle of rotations—rotations suitable for different soils—systems of farming.

5. *Manures.*—The composition of manures—general and special—amounts used per acre—period and mode of application.

6. *Food-stuffs.*—The composition of feeding substances—their suitability for different classes of farm stock—considerations affecting their use.

7. *Crops.*—"How crops grow"—our farm crops—their cultivation, in-

cluding cleaning, harvesting, and storage—diseases—insect injuries and remedies. The formation and management of plantations.

8. *Ensilage.*—Sweet and sour silage—different forms of silos and systems of ensilage.

9. *Weather.*—Meteorology, or the laws of climate as affecting plant-life—the influence of light and heat on cultivation—of absorption and retention of heat and moisture—of porosity and capillarity in soils.

10. *Live Stock.*—The breeding, rearing, feeding, and general treatment of farm stock—the different breeds of horses, cattle, sheep, and pigs—their characteristics—the districts where they are generally met with.

11. *Machinery.*—The machines and implements used in farming—their uses, prices, and the principal points to be attended to in their construction.

12. *Mechanical Powers.*—The "prime movers," or sources of power used in agriculture: man—horse—wind—water—steam—their relative values and advantages.

13. *Farming Capital.*—Calculations of the cost of stocking and working arable, stock, and dairy farms.

Text-books.—Stephens' 'Book of the Farm,' William Blackwood & Sons, Edinburgh and London; Pringle's 'Live Stock of the Farm,' William Blackwood & Sons; Wallace's 'Farm Live Stock of Great Britain,' Crosby Lockwood & Son; M'Connell's 'Agricultural Facts and Figures,' Crosby Lockwood & Son; 'Our Farm Crops,' Blackie & Son; 'How Crops Grow,' Macmillan & Co.; Warington's 'Chemistry of the Farm,' Vinton & Co., Limited, London; Aikman's 'Manures and Manuring,' William Blackwood & Sons; M'Alpine's 'Grasses'; Geikie's 'Outlines of Geology.'

II.—BOTANY.

1. *Nutritive Organs of Plants.*—Root, stem, leaves. Functions of roots. Various kinds of stem, with examples. Use of the stem. Structure of leaves. Different kinds of leaves. Arrangement and functions of leaves.

2. *Reproductive Organs.*—Flower and its parts. Arrangements of the whorls of the flower—calyx, corolla, stamens, pistil. Ovule. Mature pistil or fruit. Pruning and grafting. Seed. Young plant or embryo. Sprouting of the seed, or germination.

3. *General Principles of Classification.*—Meaning of the terms Class, Order, Genus, and Species. Illustrations of natural orders taken from plants used in agriculture, such as grain crops, grasses, clovers, vetches, turnips, mangel-wurzel, peas, beans, &c. Practical examination in fresh specimens and models; some of the latter may be seen in the Museum at the Royal Botanic Garden, which is open daily to the public, free.

Text-book.—Balfour's 'Elements of Botany,' A. & C. Black.

III.—CHEMISTRY AND PHYSICS.

Physics.

Matter.—Essential properties. Measurement of mass and capacity—decimal system. Solids, general properties. Liquids—capillarity, osmosis, hydrostatic law. Gases—density, diffusion, barometer, Boyle's law, Charles's law.

Energy.

Transformation and Conservation of energy. Heat—temperature, thermometer, conduction, convection, radiation, mechanical equivalent of heat. Light—refraction, polarisation, the spectrum.

Chemistry.

Processes—solution, filtration, sublimation, distillation, crystallisation, dialysis. Fundamental laws—constant proportion, multiple proportion, Avogadro's law, periodic law. Classification of the elements—characteristics of the commoner elements. Water—natural waters, their common impurities, soft and hard waters, water storage, water purification, composition, analysis, hydrates, steam, latent heat of water and steam. Hydrogen. Oxygen, oxides. Acids, bases, salts. Nitrogen, ammonia, nitric acid, nitrates and nitrites. The atmosphere—relation to animal and vegetable life. Chlorine—hydrochloric acid, chlorides, hypochlorites, bleaching-powder, bleaching, disinfection, chlorates. Bromine, iodine, and fluorine, and their chief compounds. Sulphur, sulphuretted hydrogen, sulphuric acid and sulphates, sulphurous acid, sulphites, and thiosulphates. Phosphorus, oxides of phosphorus, phosphates. Borates and silicates. Carbon, its oxides, carbonates, carbon disulphide. Hydrocarbons, chloroform, alcohols, ether, aldehyde, amines and amides, formic, acetic, oxalic, lactic, tartaric, and citric acids and their commonest salts. Glycerol, saponification. Distillation of wood and coal. Benzene, anilin, carbolic acid, benzoic acid, turpentine. Hydrocyanic acid, cyanides, cyanates. Urea, uric and hippuric acids.

The following metals, their ores, metallurgy, oxides, and more important salts—potassium, sodium, barium, calcium, magnesium, aluminium, zinc, manganese, iron, chromium, bismuth, antimony, arsenic, lead, copper, mercury, silver, tin, platinum.

The chief tests for these metals and for the following acids—sulphuric, sulphurous, phosphoric, carbonic, hydrochloric, nitric, acetic, and oxalic. Alkaloids, morphin, quinin, strychnin.

IV.—AGRICULTURAL CHEMISTRY.

1. *Soils.*—Their origin, formation, and classification. The physical and chemical properties of soils, and their improvement by physical and chemical means—their relation to air and water. Nitrification and the biology of the soil.

2. *Plants.*—The mineral and organic constituents of plants. The substances required for plant nutrition, and their relative importance. The chemical processes occurring in the germination, growth, and maturation of plants. Albuminoids, amides, and amido acids. Carbohydrates—sugars, starch, cellulose, pentoses. Fermentations—alcoholic, acetic, lactic, and butyric. Plant decay.

3. *Manures.*—Farmyard manure—its composition, improvement, and conservation. Fertilisers—their classification, composition, uses, and abuses—their mutual compatibility—their suitability for different crops and for different soils. The investigation and analysis of fertilisers, and their valuation and economic application. The conducting of manurial experiments.

4. *Crops.*—The chemical composition of the more important crops, and their mutual relations. The science of rotations. Symbiosis.

5. *Fodders.*—The general composition of the different classes of fodder crops. The circumstances affecting the nutritive value and digestibility of fodders. The injuries and impurities to which they are liable. The analysis and investigation of fodders. The detection of impurities in concentrated fodders.

6. *Animal Nutrition.*—The main facts regarding respiration and digestion. The production of flesh, fat, and bone. The nutrient ratio as a guide in stock-feeding. The calculation of dietaries. The relation of food to the age, condition, and progress of stock, and also to work. The conducting of feeding experiments.

7. *Dairy Produce.*—The chemical composition of milk. The testing and analysis of milk. The circumstances affecting milk production.

Milk preservation. The composition of butter and cheese, and the chemical and physical conditions requisite for the production of butter and cheese of good quality. The sophistications of dairy produce and their detection. The diseases of milk and cheese, and the means of preventing their occurrence. The general scientific conduct of the dairy.

8. *The Relation of Food to Manure.*—The quality of manure derived from different kinds of stock, according to age, use, and feeding. Circumstances affecting the value of manures derived from feeding. The estimation of unexhausted fertility under different systems of feeding, manuring, and cropping.

Text-books.—Roscoe's 'Lessons in Elementary Chemistry,' Macmillan & Co., London, price 4s. 6d.; Johnston and Cameron's 'Elements of Agricultural Chemistry and Geology,' William Blackwood & Sons; Johnston's 'How Crops Grow,' Macmillan & Co., London; Warington's 'Chemistry of the Farm,' Vinton & Co., Limited, London.

V.—NATURAL HISTORY.

1. Zoology.

1. The characters distinguishing the primary divisions of the Animal Kingdom.

2. A general knowledge of British Mammals, Birds, and Fresh-water Fishes. A more special knowledge of the natural history of the domestic animals and their parasites.

3. The classification of insects, and a knowledge of those which are injurious to crops.

Text-book.—Nicholson's 'Introductory Text-Book of Zoology,' William Blackwood & Sons, Edinburgh and London.

2. Geology.

1. A general knowledge of the chemical composition and physical characters of the rock-forming minerals, and of the composition and mode of occurrence of the common rocks. The changes in rocks and minerals induced by weathering.

2. The terms (Dip, Strike, &c.) used in descriptive field Geology.

3. A general knowledge of the great geological formations, with their characteristic fossils.

4. The geological sources of the leading economic mineral products.

5. Influence of the geological structure of a country on the configuration of the land and the composition of the soil.

Text-books.—Page's 'Introductory Text-Book of Geology' and Lyell's 'Students' Elements of Geology.'

VI.—VETERINARY SCIENCE.

1. Anatomy of the digestive organs of horse, ox, and sheep, including their structural differences.

2. The digestive processes and principles of nutrition in the above animals.

3. A general knowledge of the blood and its circulation, and the processes of respiration, secretion, and excretion.

4. The physiology of reproduction, and its bearings on healthy breeding.

5. The period of utero-gestation in the mare, cow, ewe, and sow, and the special management of these animals prior to, at the time of, and after parturition.

6. The feeding and general management of farm stock.

7. Their more common diseases, with the general principles of treatment.

Text-books.—'Youatt on Sheep,' price 7s. 6d.; Steel's 'Diseases of the Ox,' price 15s.; Williams's 'Principles and Practice of Veterinary Surgery,' price 30s.; Williams's 'Principles and Practice of Veterinary Medicine,' price 30s.

VII.—FIELD-ENGINEERING.

1. Land-surveying with the chain.

2. Mensuration of areas of land, in imperial and Scotch acres, from a chain survey or from a plan.

3. Levelling with the ordinary levelling instrument and staff, and calculating levels and gradients.

Text-book.—'Rudimentary Treatise on Land and Engineering Surveying,' by T. Baker, C.E., Weale's Series, price 2s. Part i. chaps. 1, 2, 3, and 6, and part ii. chap. 1, to be read.

VIII.—BOOK-KEEPING.

1. Questions in Practice and Proportion.

2. Book-keeping—Describe books to be kept; give examples—taking of stock.

Text-book.—Stephens' 'Practical System of Farm Book-keeping,' William Blackwood & Sons, Edinburgh, price 2s. 6d.

EXAMINATION PAPERS, 1897.

AGRICULTURE.

1. Given a farm of 450 acres of good land in an arable district—200 acres being under crop rotation, 50 acres in hay meadow, and 200 acres in permanent pasture suitable for a "running" flock of long-wool or Down ewes and for fattening cattle. State (*a*) the numbers of the different kinds of work-animals and other live stock—horses, cattle, sheep, pigs—required to consume the bulky produce of the holding, (*b*) what concentrated food would also be necessary, (*c*) the rotation of crops and area occupied by each crop, and (*d*) what yearly profit you would expect from each section, giving your calculations in detail.

N.B.—Mention the locality in which the farm is situated, and the rent and taxes you pay.

2. Draw a ground-plan (showing dimensions in feet) of modern farm-buildings suitable for the above farm, and give a list of the machines placed in the buildings, and of the implements required for field work.

3. Name the chief feeding breeds of cattle kept in Britain. Describe the characteristics that should be found in a good feeding animal of any breed, and mention any characteristics that are held to indicate poor fattening properties.

4. What is meant by ensilage? Describe how a grass crop may be made into silage, and explain what differences should be made in the method in order to produce sweet and sour silage respectively. Mention the advantages and disadvantages of ensiling a crop instead of making it into hay.

5. Give details of the growing, harvesting, and marketing of a crop of oats of, say, 40 bushels per acre. Take rent and taxes at 25s. per acre, and make out a Dr. and Cr. account for the crop.

6. Give working details of the growing of a crop of swedes on similar land to that in question 5. Give cost of seed, labour, and manures, and state how you would use the crop for stock.

7. Take a 400-acre farm in the neighbourhood of a large town (where *everything* is sold off), at a rent of £3, 10s. per acre. Describe the kinds and extents of the various crops you would grow, with an estimate of the gross returns of each crop, and state the kinds and quantities of manure you would purchase and apply to each of the crops.

8. In a day's threshing of oats with a steam threshing-machine, where the stacks are situated 100 yards away from the machine, state number of horses and labourers you would employ, and the work you would allot to each. With a crop of 48 bushels per acre, how much grain and straw would you expect to thresh in a day of nine hours?

(*Three hours allowed.*)

BOTANY.

1. Contrast the root systems of clovers and grasses.

2. Describe and explain the functions of the underground parts of—(*a*) turnip, (*b*) couch-grass, (*c*) potato.

3. What are the conditions necessary for germination, and what the changes that take place during the process?

4. Classify the carrot, and state the characters which determine your classification.

5. Describe the specimen.

(*An hour and a half allowed.*)

CHEMISTRY AND PHYSICS.

1. Explain the principle of the mercurial barometer, and how it is that the barometer may be used to indicate the approach of rainy weather.

2. Define conduction of heat, and show how it differs from convection.

3. How is Bleaching Powder made? What is the action upon it of (*a*) a weak acid and (*b*) a strong acid?

4. Write the formulæ of the following substances, and give equations showing the action of heat upon each of them: Rhombic phosphate of soda, Superphosphate of lime, Microcosmic salt, Hypophosphorous acid.

5. What is the percentage composition of common alcohol? What is the action of Chromic acid upon alcohol?

Agricultural Chemistry.

1. What kinds of soil are most capable of retaining water? What means besides drainage may be employed to render such soils drier?

2. What are the chief characteristics and the composition of the following manures?—Superphosphate, Sulphate of ammonia, Nitrate of soda, Lime, Basic slag. What mixtures of these substances would be wasteful or injurious?

3. Starch—
   - (a) What is its composition?
   - (b) Where and from what is it made in the plant?
   - (c) How is it converted into sugar?
   - (d) How may the starch of the potato and of barley be distinguished?
   - (e) How would you detect the presence of starch in a sample of linseed-meal?

4. Describe two methods of determining the percentage of fat in a sample of milk.

(*Two hours allowed.*)

NATURAL HISTORY.

ZOOLOGY.

1. State the most important differences between Pigeon and Dog as regards skeleton, brain, and respiratory system. How does an unhatched chick breathe within the egg?

2. Give a short account of the Order Rodentia. Mention the more important species found in Britain.

3. Describe the life-history of the worm which causes Trichinosis. Mention three other important parasites belonging to the same class.

GEOLOGY.

1. Describe the work done by water as a geological agent.

2. What do you understand by slicken-side, false-bedding, strike-joint, unconformability, anticline?

3. What are the characters of quartzite, slate, marble, gneiss, apatite?

4. Give an account of the Permian rocks. Mention some of the characteristic fossils and the more important economic products of the system.

(*An hour and a half allowed.*)

VETERINARY SURGERY.

1. What are the usual symptoms of choking, on roots or cake, in the ox? and how is the condition treated?

2. What are the principal changes which the blood and air undergo in respiration? and what amount of cubic space, per horse, is allowed in a good modern stable?

3. Describe the conformation of a well-formed and "deep milking" Ayrshire or Shorthorn cow.

4. State the period of rest (cessation from milking) a cow should have betwixt her calves, and detail the dieting which you would prescribe, say, a fortnight prior to, and for ten days after, calving.

5. Should a dose of purgative medicine be given when the labour pains come on? If so, why so? If not, why not?

(*An hour and a half allowed.*)

MENSURATION AND FIELD-ENGINEERING.

NOTE.—Candidates must work out the questions on sheets of paper which will be supplied to them, which sheets must bear the Candidate's number, and be lodged, along with this examination paper, with the Secretary. The answers to the questions, excepting No. 6, are also to be filled in on this paper.

NOTE OF IMPERIAL MEASURE.

10,000 square links = 1 square chain.
625 do. = 0·0625 do. = 1 pole.
25,000 do. = 2·5 do. = 40 poles = 1 rood.
100,000 do. = 10 do. = 160 do. = 4 roods = 1 acre.

The imperial is to the Scotch acre as 1 : 1·261 nearly.

1. Find the area of the rectangular piece of ground A B C D. Give the answer in acres, roods, and poles; and also in acres and decimals.

2. Measure by the scale, and mark in links on the paper the measurements necessary to calculate the area of the triangle A B C; also give the area of the triangle in acres and decimals.

3. Give the lengths in links of the sides of a right-angled triangular piece of ground the area of which is 15 acres, the perpendicular side being to the base as 3 is to 4.

4. The contents of a piece of land being 713 imperial acres, give the area in Scotch acres and decimals.

5. Given the field A C B D E having the side A E parallel to B D and the length A B 1320 links; it is required to divide off 9 acres, including A C B, from the rest of the field by a fence *a b* parallel to A B. If the area of the shaded portion A C B be 12,960 square links, what will be the perpendicular distance between the lines A B and *a b*?

6. Write down, as if in a level-book, the staff-readings in feet and decimals shown in the above sketch section; then reduce the levels beginning at A, so as to calculate the heights of B, C, D, E, F, and G.

7. If the slope from A to G were cut to a uniform gradient to form a road, what would that gradient be?

(An hour and a half allowed.)

ARITHMETIC AND BOOK-KEEPING.

1. Divide a purse containing 16s. 8d. among 3 boys according to their ages. A is 10, B is 12, and C is 14; state their respective shares, and verify by addition.

2. Find by Practice the cost of 3 tons 5 cwt. 27 lb. 13 oz. at £4, 13s. 4d. per quarter.

3. If the rent of a farm of 204 acres 1 rood be £380, 9s., what should the rent be when a field of 21 acres 30 poles of equal value is added to it?

4. A bankrupt who pays his creditors 12s. 6d. per £, pays in all £340, 6s. What was his debt?

5. A farmer bought 126 qrs. of wheat when the price was £2, 5s. 6d. per quarter. What quantity should he sell when the price is at 2 guineas, to recoup himself?

6. If 18 men cast 30 yards of ditching in 24 days by working 8 hours per day, how many men will cast 60 yards in 64 days working 6 hours a-day?

7. If 15 horses and 148 sheep can be kept 9 days for £75, 15s., what sum will keep 10 horses and 132 sheep for 8 days, supposing 5 horses to eat as much as 14 sheep?

8. 10 excavators dig 12 loads of earth in 16 hours, whilst 12 others can dig only 9 loads in 15 hours. In what time will they jointly dig 100 loads?

9. Name the different business books which ought to be kept by a farmer.

Describe how the books named ought to be brought to a close.

From the following Trial Balance of the Ledger kept by Andrew Turner, sheep farmer, make up a Profit and Loss Account and Balance-Sheet as at 31st December 1896:—

	Dr.			*Cr.*		
Andrew Turner (Capital Account)	£			£2000	0	0
do. (Personal Account)	91	13	4			
Cash Account	85	10	0			
Sheep do.				320	0	0
Wool do.				50	0	0
Bills Payable Account				200	0	0
Bills Receivable do.	480	0	0			
Rent Account	7	0	0			
Wages do.	10	0	0			
Swan & Son do.				90	0	0
John Irvine do.	150	0	0			
John Smith do.	180	0	0			
Alex. James do.	80	0	0			
Wm. Abbot do.				1200	0	0
H. Baxter do.	250	0	0			
Interest and Discount do.	25	16	8			
Stock Account	2500	0	0			
	£3860	0	0	£3860	0	0

(*An hour and a half allowed.*)

VETERINARY DEPARTMENT

The Society established a Veterinary Department in 1823, but by an arrangement made with the Royal College of Veterinary Surgeons, the Society's examination ceased in 1881. Holders of the Society's Veterinary Certificate are entitled to become Members of the Royal College of Veterinary Surgeons on payment of certain fees, without being required to undergo any further examination. The number of Students who have passed for the Society's Certificate is 1183.

In 1874, the Society resolved to vote annually eight silver medals for Class Competition to each of the two Veterinary Colleges in Edinburgh, and to the one in Glasgow.

FORESTRY DEPARTMENT

The Society grants FIRST and SECOND CLASS CERTIFICATES in FORESTRY.

BOARD OF EXAMINERS.

Science of Forestry, Practical Management of Woods, and Forest Entomology.—COLONEL BAILEY, Lecturer on Forestry, Edinburgh University, 7 Drummond Place; Dr SOMERVILLE, Durham College of Science, Newcastle-on-Tyne; J. GRANT THOMSON, Grantown, Strathspey; D. F. MACKENZIE, Morton Hall, Liberton, Mid-Lothian; ANDREW SLATER, Osborne, Isle of Wight.

Forest Botany and Zoology.—Professor BAYLEY BALFOUR, Professor A. N. M'ALPINE, and R. S. M'DOUGALL.

Physics, Chemistry, and Meteorology.—Dr WM. CRAIG and Dr A. P. AITKEN.

Land and Timber Measuring and Surveying; Mechanics and Construction, as applied to Fencing, Drainage, Bridging, and Road-making.—A. W. BELFRAGE, C.E., Edinburgh.

Book-keeping and Accounts.—WM. HOME COOK, C.A., Edinburgh.

Candidates must possess—1. A thorough acquaintance with the theory and practice of Forestry. 2. A general knowledge of the following branches of study, so far as these apply to Forestry: The Elements of Botany; The Elements of Physics, Chemistry, and Meteorology; Forest Entomology; Land and Timber Measuring and Surveying; Mechanics and Construction, as applied to fencing, draining, bridging, and road-making; Implements of Forestry; Book-keeping and Accounts.

The examinations are open to candidates of any age, will be both written and oral, and will include such practical tests as may from time to time be found convenient to apply.

The maximum number of marks for each subject is 100; First-Class marks in all subjects 75, Second-Class marks in all subjects 50, Pass marks in all subjects 40.

To obtain the *First-Class Certificate* a Candidate must have First-Class marks in Forestry and any two of the other subjects, and Pass in the two remaining subjects. To obtain the *Second-Class Certificate* a Candidate must obtain Second-Class marks in Forestry and in any two of the other subjects, and Pass in the two remaining subjects.

If a Candidate fail to get First-Class marks in only one or two subjects he can come up again for examination in these subjects alone for the *First-Class Certificate*, otherwise he must go through the entire examination again.

The following have obtained First-Class Certificates:—

George Young Wall, M.R.A.C., Durham,	1870
William Baillie, The Nurseries, Haddington,	1871
William Robertson, Forester's House, Lauder,	1871
Peter Loney, Marchmont, Duns,	1873
John M. Aitken, Norwood, Lockerbie,	1880
Richard Henderson, Portland Estates Office, Kilmarnock,	1880
A. H. Gibson, Kirkcaldy,	1882
Alex. Inglis, Greenlawdean, Greenlaw,	1882
Peter Reid, Port Ellen, Islay,	1884
John Hardie Wilson, D.Sc., F.R.S.E., St Andrews,	1884
Cecil Henry Hooper, M.R.A.C., Highlands Farm, Swanley, Kent,	1886
William Somerville, B.Sc., Prof. of Agriculture and Forestry, Durham College, Newcastle-on-Tyne,	1886
John Bardgett, 1 Gayfield Street, Edinburgh,	1887
Wilfred James Fleet, Estate Office, Thurlow, Suffolk,	1888
Arthur Charles Forbes, Bowood, Calne, Hants,	1888
A. J. Farquharson, Newtyle, Forfarshire,	1890
John C. Menzies, Bankhead, Duns,	1891
John F. Annand, Bruckley, Aberdeenshire,	1895
William Davidson, Aldbar, Brechin,	1895
Alexander Fraser, Earnside, Alves, Forres,	1896
Patrick Hugh Guthrie, 49 Cluny Gardens, Edinburgh,	1897

The following have obtained Second-Class Certificates:—

John M'Ewen, Yellow Cottage, Killin,	1880
Thomas Berwick, 56 North Street, St Andrews,	1885
Donald C. Cameron Grant, Southleigh, Murrayfield,	1886
John A. Sawyer, Horningsham, Warminster, Wilts,	1891
H. W. Tucker, Blackheath,	1893
H. S. Daine, Woolfall Hall Farm, Huyton, Liverpool,	1894
John Maughan, Jervaulx Abbey, Bedale,	1894
Eric Arthur Nobbs, Edinburgh,	1894
John James Simpson, The Gardens, Wortley, near Sheffield,	1894
J. W. Paterson, Brunstane Road, Portobello,	1895
Hugh W. Stone, Carlton Lodge, Tunbridge Wells,	1895
Andrew Linton, Oakwood, Selkirk,	1896
Fred. Wakerley, Bitchfield, Grantham,	1896
Charles E. Legat, 16 Cluny Drive, Edinburgh,	1897
Donald M'Lean, jun., Rhives, Golspie, N.B.,	1897
William Taylor, Ninebanks, Allendale, Northumberland,	1897
Charles W. Watson, Summer Hill, Kendal	1897

SYLLABUS OF EXAMINATION.

I.—SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

I. *Principles of Scientific Forestry.*—1. Effects of heat, light, moisture, and air-currents on forest vegetation. 2. Effects of depth, porosity, moisture, and chemical composition of the soil on forest vegetation. 3. Effects of forest vegetation on the soil and air. 4. Rate and extent of development, longevity, and reproductive power of trees. 5. Pure and mixed woods. 6. Systems of sylviculture.

II. *Practical Management of Woods.*—7. Draining and irrigation. 8. Choice of species for various situations. 9. Seed and sowing, including nurseries. 10. Planting. 11. Natural regeneration by seed, shoots, and suckers. 12. Formation of mixed woods. 13. Tending of young woods. 14. Pruning. 15. Thinning. 16. Sylvicultural characteristics of the principal trees.

III. *Injuries by Storms and Fires.*—17. Storms. 18. Fires.

IV. *Timber.*—19. Its technical properties. 20. Its defects. 21. Recognition of different kinds of timber. 22. Processes for increasing its durability.

V. *Utilisation of Produce.*—23. Uses of wood and other produce. 24. Felling. 25. Conversion. 26. Seasoning. 27. Transport. 28. Sales 29. Harvesting of bark.

VI. *Forest Organisation.*—30. General ideas regarding a regulated system of forest management.

Books recommended.—Schlich's 'Manual of Forestry'; Nisbet's 'British Forest Trees'; Nisbet's 'Studies in Forestry'; Fürst's 'Protection of Woodlands,' translated by Nisbet; Hough's 'Elements of Forestry'; Brown's 'Forester' (latest edition); Laslett's 'Timber and Timber Trees.'

II.—FOREST BOTANY AND FOREST ZOOLOGY.

(*a*) Forest Botany.

The fundamental facts of morphology, physiology, and classification of plants. The structure and function of the plant-cell and the plant-tissues. Their primary distribution. The secondary changes they exhibit in consequence of perennation.

The structure and function of the root and shoot in flowering-plants. Buds, their forms and uses. The flower. The fruit. The seed.

The structure and function of vegetative and reproductive organs of fungi.

Relationship of plants to air, soil, and water. Effect of light, heat, and mechanical agencies upon plants. Nutrition. The nature and elements of the food of plants. Sources of plant-food. The absorption, elaboration, transference, and storage of food. Respiration and transpiration. Parasites and saprophytes. Symbiosis.

Growth of plants in length and thickness. Correlation of growth, pruning. Germination of seeds. Formation of wood and bark. Healing of wounds.

Diseases of plants due to faulty nutrition and unfavourable circumstances of growth. Diseases due to attacks of fungi.

Natural reproduction and propagation by seeds and by buds. Fertilisation of flowers. Hybridisation. Artificial propagation by budding, grafting, layering, and cutting.

The characters of the large groups and classes of the vegetable kingdom. The characters of the families of plants which include the chief timber trees. The botanical characteristics of the principal British forest-trees (including the structural features of their wood). The weeds of the forest and their significance.

Books recommended.—Scott, 'Structural Botany'; Prantl and Vines, 'Text-Book of Botany'; Marshall Ward, 'Timber and some of its Diseases'; Marshall Ward, 'Diseases of Plants'; Marshall Ward, 'The Oak'; Schlich's 'Manual of Forestry,' vol. ii., Appendix to chapter iv., by Marshall Ward; Hartig, 'Timbers, and how to know them,' translated by Somerville; Hartig, 'Anatomy and Physiology of Plants,' translated by Nisbet; Hartig, 'Diseases of Plants,' translated by Marshall Ward and Somerville; Warming, 'Handbook of Systematic Botany,' translated by Potter; Bower, 'Practical Botany for Beginners.'

(*b*) FOREST ZOOLOGY.

The group Insecta: its position in the animal kingdom. Structure, mode of reproduction, and metamorphosis of insects. The outlines of classification of the group. Conditions favourable to the numerical increase of insects. Natural checks to increase (*e.g.*, birds, mammals, parasitic insects). The identification and life-history of the more important insects injurious to forest-trees and fruit-trees. The damage caused by these insect pests and their mode of attack. The damage caused by animals. Preventive and remedial measures.

Books recommended.—Ormerod, 'Manual of Injurious Insects'; Fürst, 'Protection of Woodlands,' translated by Nisbet; various articles in 'Transactions' of Highland and Agricultural Society and of Royal Scottish Arboricultural Society.

III.—PHYSICS, CHEMISTRY, AND METEOROLOGY.

Physics.

Mass, weight, specific gravity, solid, liquid, and gaseous states of matter. Capillarity, osmose, vapour tension, suction pump, force pump, syphon, barometer, atmospheric pressure. Boyles's law. Levers and pulleys. Heat, measurement of heat, specific heat; transference of heat by conduction, convection, and radiation. Boiling and freezing. Latent heat. The thermometer. The conservation and transformation of energy. Light—reflection, refraction, polarisation; the spectrum. The rudiments of electricity and magnetism.

Chemistry.

Elements. Oxygen, hydrogen, nitrogen;—their preparation, properties, and chief compounds. Acids, bases, salts. Combustion, oxidation, reduction. Sulphur, Carbon, Phosphorus; and their compounds, with oxygen and hydrogen. Metals—potassium, sodium, calcium, magnesium, aluminium, iron, copper, lead, mercury, and their chief compounds. Carbohydrates, marsh gas, olefiant gas, alcohol, acetic acid, oxalic acid. Distillation of wood and coal.

Meteorology.

The atmosphere, its composition and physical properties. Measurement of pressure and temperature. The barometer. Rain, hail, snow, fog, cloud, dew, the dew point, hoar frost. The weathering of rocks and soils. Gases injurious to vegetation.

Books recommended.—'Elementary Physics,' Balfour Stewart; 'Lessons in Elementary Chemistry,' Roscoe; 'Introductory Text-Book of Meteorology,' Buchan.

IV.—LAND AND TIMBER MEASURING AND SURVEYING; MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING, BRIDGING, AND ROAD-MAKING.

1. The use of the level and measuring-chain. Measuring and mapping surface areas. 2. The measurement of solid bodies—as timber, stacked bark, fagots, &c., earthwork. 3. The different modes of fencing and enclosing plantations; their relative advantages, durability, cost of construction, and repairs. 4. The setting out and formation of roads for temporary or permanent use. 5. The construction of bridges over streams and gullies; of gates or other entrances.

Books recommended.—'Agricultural Surveying,' by John Scott (Weale's Series); Hoppus's 'Tables'; 'Farm Roads, Fences, and Gates,' by John Scott (Weale's Series); Brown's 'Forester' (latest edition).

V.—BOOK-KEEPING AND ACCOUNTS.

1. Questions in Practice, Proportion, and Decimal Fractions. 2. Book-keeping—describe books to be kept; and best method of valuing timber. 3. Practical questions in Book-keeping will also be given.

Book recommended.—Brown's 'Forester' (latest edition).

EXAMINATION PAPERS, 1897.

PRACTICAL FORESTRY.

1. What do you understand by a satisfactory degree of "closeness" or "density" in a plantation? What are the effects of closeness on (*a*) the fertility of the soil, (*b*) the form of the trees, and (*c*) the character of the timber?

2. Give a detailed account of the nursery management of the Scots pine, the Norway spruce, and the oak up to the end of the fourth year. In each case specify (*a*) the cost of the seed, (*b*) the quantity of seed requisite for 100 square yards of seed-bed, (*c*) the probable percentage germination of the seed, (*d*) the number of plants that a pound of seed may be expected to yield, (*e*) the manner of sowing in drills and broadcast, and (*f*) the distance between the rows, and between the plants, in the plant-bed.

3. Assuming that the situation is of the highest quality, and that the wood is 50 years old, state approximately the number of trees and volume of timber that you would expect to find on an acre in the case of pure woods of Scots pine, spruce, and beech.

4. Summarise the advantages and disadvantages of planting in autumn and in spring. What are the effects of frequent alternations of fresh and frosty weather on trees recently planted on rather wet land?

5. Give a short account of the systematic cropping of forest land. What general considerations should determine the length of the rotation, and how do you know when the time has arrived when it is more profitable to fell a wood than to leave it standing?

(*Two hours allowed.*)

FOREST BOTANY AND FOREST ENTOMOLOGY.

Candidates are expected to answer five of the questions—three from the Section of Forest Botany, and the two in the Section of Forest Entomology.

(*a*) FOREST BOTANY.

1. Describe carefully the structural changes that precede the fall of the leaf. What physiological differences are there between a tree clothed with leaves and when defoliated?

2. Give an account of any fungus parasitic on a Forest tree under the following heads—

(*a*) Life-history.
(*b*) Damage done.
(*c*) Means of prevention and remedy.

3. By what external characteristics would you recognise the following?—
Oak, Beech, Elm, Hornbeam, Sycamore.

4. Name some of the weeds you would expect to find in a Forest. What biological relationships are there between any of these weeds and the trees of the Forest?

5. Give an account of the formation of wood.

(*b*) FOREST ENTOMOLOGY.

6. Give the life-history of the Spruce-Gall Aphis (*Chermes abietis*), noting the damage it causes, and the remedial measures you would adopt.

7. What are the typical kinds of larvæ you might find in or on a tree? By what characteristics would you refer them to their natural order?

(*Two hours allowed.*)

PHYSICS, CHEMISTRY, AND METEOROLOGY.

1. A stone weighs 1 cwt. in air and 70 lb. in water: what is its specific gravity?

2. A block of ice at 0° C. weighing 20 lb. is put into 50 gallons of water at 15° C. How much will the temperature of the water be lowered thereby?

3. How may magnesium sulphate be prepared from Dolomite (Magnesian limestone)?

4. How is Nitric acid prepared? What substances are formed when Nitric acid acts on Soda, on Lime, and on Ammonia? What is the effect of heat on each of these substances?

5. How may injury done to the leaves of a plant by frost be distinguished from injury done by the action of sulphurous acid?

(*An hour and a half allowed.*)

LAND AND TIMBER MEASURING AND SURVEYING; MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING, DRAINAGE, BRIDGING, AND ROAD-MAKING.

1. A drain has a fall of 1 in 144: what fall is there on each 3 ft. length of pipe?

2. It is proposed to drain a hollow in a field. At a distance of 252 feet the ground is 4 feet higher. Commencing at a depth of 2 ft. 6 in. below the surface in the hollow, and giving the drain a fall of 1 in 72, what would the depth be at the high point 252 feet from the point in the hollow?

3. Calculate the cubic contents of a heap of road metal 30 feet long and 20 feet broad on the top, 6 feet high, and side slopes 2 horizontal to 1 vertical, and give the result in cubic yards.

4. Give a short specification, with sketches, of a stob and wire fence for an enclosure where sheep and cattle are grazing, and state probable cost.

5. Draw sketch of bridge over burn, formed with concrete and iron joists, for farm road, 12 feet wide, depth from surface to bed of burn 8 feet, and give short specification.

6. Describe the formation of an avenue through a Policy, giving particulars as to excavation and banking, metalling, draining, &c., and show cross-section.

7. Describe what steps should be taken to ensure that drain tiles are properly laid in mossy ground, where there is little fall.

(Two hours allowed.)

ARITHMETIC AND BOOK-KEEPING.

1. (1) Multiply 1·23 by ·0059, and divide the product by ·005; (2) Divide 72·36 by 3·6 and ·0036.

2. Add together ⅗ of a day, ⅔ of an hour, and ⅘ of 6 hours, and express the result as the decimal of a week.

3. What is the rent of 225 ac. 1 ro. 19 po. at 13s. 2½d. per rood?

4. If 15 pumps working 8 hours a-day can raise 1260 tons of water in 7 days, how many pumps working 12 hours a-day will be required to raise 7560 tons of water in 14 days?

5. The length of a rectangular field which contains 4 ac. 3 ro. 14 po. 26½ sq. yards is 260 yds. 1 ft. 4 in. What is its breadth?

6. A log of timber is 18 feet long, 1 foot 4 inches wide, and 15 inches thick. If a piece containing 2½ solid feet be cut off the end of it, what length will be left?

7. The wages of 5 men, 3 women, and 1 child amount to £4, 10s., a man receiving twice as much as a woman, and a woman three times as much as a child. What will the wages of 6 men, 2 women, and 5 children be?

8. Describe briefly the books a forester ought to keep, and their nature and use. Explain also the best method of recording sales by private contract and public auction, and give examples.

(An hour and a half allowed.)

DAIRY DEPARTMENT

EXAMINATION IN THE SCIENCE AND PRACTICE OF DAIRYING.

This Examination, instituted in 1897, is conducted jointly by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland.

REGULATIONS.

1. The Societies may hold annually in England and in Scotland one or more Examinations of Dairy Teachers and Dairy Students for the National Diploma in the Science and Practice of Dairying; the Diploma to be distinguished shortly by the letters "N.D.D."
2. The Examinations will be held on dates and at places from time to time appointed and duly announced.
3. A deposit of £1 will be required from each candidate, which deposit will be returned to those who succeed in obtaining the Diploma. The Societies may, at their discretion, allow the deposit paid by an unsuccessful candidate to be used for one subsequent Examination for the Diploma.
4. Forms of Entry for the Examination in England may be obtained of the Secretary of the Royal Agricultural Society of England, 13 Hanover Square, London W.
5. Forms of Entry for the Examination in Scotland may be obtained from the Secretary of the Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh.
6. A candidate may enter for the Examination either in England or Scotland, but not in both, and a candidate who has once taken part in an Examination in England cannot enter for an Examination in Scotland, or *vice versa*.
7. A candidate will be required to satisfy the Examiners, by means of written papers and *vivâ voce*, that he or she has—
    (1) A general knowledge of all matters connected with the management of a Dairy Farm, including the rearing and feeding of Stock.
    (2) A thorough acquaintance, both practical and scientific, with everything connected with the management of a Dairy, and the manufacture of Butter and Cheese.
    (3) Practical skill in Dairying, to be tested by the making of Butter and Cheese.
    (4) Capacity for imparting instruction to others.
8. The Societies reserve the right to postpone or abandon an Examination in the event of the number of candidates entered not being sufficient to warrant the expense of holding the Examination.

By Order,

ERNEST CLARKE,
Secretary Royal Agricultural Society of England,
13 Hanover Square, London W.

JAMES MACDONALD,
Secretary Highland and Agricultural Society of Scotland,
3 George IV. Bridge, Edinburgh.

EXAMINATIONS IN 1897.

ENGLAND—MONDAY, September 27, to FRIDAY, October 1, at a place to be duly announced; last date for receiving applications, 31st August.

SCOTLAND—MONDAY, October 4, to FRIDAY, October 8, at the Kilmarnock Dairy School, Kilmarnock; last date for receiving applications, 31st August.

SYLLABUS.

I. GENERAL MANAGEMENT OF A DAIRY FARM.

(Only a general knowledge of the principles governing the matters referred to in this Section will be expected of the Candidate.)

Pastures and Crops.

Soils best suited for Dairy purposes. The constituents of pasture and meadow: their qualities, properties, and diseases. Poisonous and injurious plants. The weeds of pasture and meadow. Harvesting and storage of hay. Qualities and nutritive value of hay. Management of pasture and meadow for Dairy purposes. Manuring of pasture and meadow land. Natural and artificial manures. Cultivation and management of crops on a Dairy farm. Storage of root, fodder, and silage crops.

Buildings.

Situation, surroundings, construction, ventilation, and drainage of farm buildings. Suitability of building materials. Water supply. Construction and arrangement of Dairies: (*a*) for general purposes, (*b*) for special purposes.

Foods and Feeding.

Summer and winter feeding of Dairy cattle. Root crops. Green fodder. Ensilage. Different kinds of food and their composition. Their effect upon milk, butter, and cheese. Special foods used in Dairy feeding. Preparation of food for Dairy stock. Rearing and feeding of young stock. Feeding and management of pigs and poultry.

Dairy Cattle in Health and Disease.

Characteristics of different breeds, and choice of Dairy cattle. General functions of the organs of the animal body. Breeding. Parturition. Organs which secrete milk. Process of milk secretion. Changes which food undergoes during digestion. Diseases of Dairy cattle and their remedies.

II. MANAGEMENT OF A DAIRY.

Milk and Cream.

Process of milking. Dairy utensils and appliances, hand and power. Cooling of milk. Separation and ripening of cream. Different systems of cream-raising. Utilisation of skim-milk. Keeping of milk. Importance of cleanliness. Diseases spread by milk. Conveyance and sale of milk. Milk records. Keeping of Dairy and farm accounts. Creameries. Butter and cheese factories. Different systems of Dairying and their comparative returns.

Butter.

Churns and other butter-making appliances, hand and power. Souring of cream. Churning. Washing and working of butter. Butter-milk. Packing and transmission of butter. Salting and keeping of butter. Colouring. Characteristics of good butter.

Cheese.

Principles of its manufacture. Making of different kinds of cheese (from cream, whole-milk, and skim-milk). Acidity of milk. Use of rennet and its substitutes. Whey. Appliances for cheese-making. Ripening and storage of cheese. Packing and Sale of cheese. Making of cream and other soft cheeses.

Chemistry.

Nature, composition, properties, and chemical constituents of milk. Microscopical appearances. The changes which take place in milk, and how produced. Circumstances affecting the quality and quantity of milk. Influence of temperature. Chemical changes involved in keeping and souring of milk, and in the formation of butter and cheese. Taints, fermentation, and putrefaction. The use of preservatives. Milk testing and analysis. Detection of adulteration in milk, cream, butter, and cheese.

Bacteriology.

Nature and functions of bacteria. The commoner forms of bacteria taking part in the operations of the Dairy.

III. PRACTICAL SKILL IN DAIRY WORK.

Candidates must be prepared to show that they are able—(1) to milk cows, (2) to churn and make into butter a measured quantity of cream, and (3) to make one cheese of each of the following varieties: (i) hard-pressed, of not less than 30 lb., and (ii) veined, or blue-moulded, of not less than 10 lb.; and also to make one or other of the following soft cheeses:—Pont-l'Evêque, Jervais, Coulommiers, Camembert.

IV. CAPACITY FOR IMPARTING INSTRUCTION TO OTHERS.

Candidates must also show practically that they are familiar with the management of a Dairy, and are capable of imparting instruction to others.

CHEMICAL DEPARTMENT

Chemist to the Society—Dr A. P. Aitken, Chemical Laboratory,
8 Clyde Street, Edinburgh.

The object of the Chemical Department is to promote the diffusion of a knowledge of Chemistry as applied to agriculture among the members of the Society, to carry out experiments for that purpose, to assist members who are engaged in making local experiments requiring the direction or services of a chemist, to direct members in regard to the use of manures and feeding-stuffs, to assist them to put the purchase of these substances under proper control, and in general to consider all matters coming under the Society's notice in connection with the Chemistry of Agriculture.

MEMBERS' PRIVILEGES IN RESPECT OF ANALYSES.

The fees of the Chemist for analyses made for members of the Society shall, until further notice, be as follows:—

The estimation of *one* ingredient in a manure or feeding-stuff,	5s.
The estimation of *two* or *more* ingredients in do.	10s.

These charges apply only to analyses made for agricultural purposes, and for the sole and private use of members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

Valuations of manures, according to the Society's scale of units, will be supplied if requested.

MISCELLANEOUS.

Analysis of water[1] to determine purity, hardness, and fitness for domestic use,	£1	0	0
Analysis of agricultural products—hay, grain, ensilage, roots, &c.,	1	0	0
Analysis of soil, to determine fertility and recommendation of manurial treatment,	2	0	0
Search for poisons in food or viscera,	2	0	0

Samples should be sent (carriage paid) to Dr A. P. Aitken, 8 Clyde Street, Edinburgh.

INSTRUCTIONS FOR SELECTING SAMPLES FOR ANALYSIS.

MANURES.

Four or more bags should be selected for sampling. Each bag is to be emptied out separately on a clean floor, worked through with the spade, and one spadeful taken out and set aside. The four or more spadefuls thus set aside are to be mixed together until a uniform mixture is obtained. Of this mixture one spadeful is to be taken, spread on paper, and still more thoroughly mixed, any lumps which it may contain being broken down with the hand. Of this mixture two samples of about half a pound each should be taken by the purchaser or his agent, in the presence of the seller or his agent or two witnesses (due notice having been given to the seller of the time and place of sampling), and these samples should be taken as quickly as possible, and put into bottles or tin cases to prevent loss of moisture, and having been labelled, should be sealed by the samplers—one or more samples to be retained by the purchaser, and one to be sent to the chemist for analysis.

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[1] Cases containing bottles for water samples and instructions for sampling are sent from the laboratory on application.

FEEDING-STUFFS.

Samples of feeding compounds should be taken in a similar manner.

Samples of cake should be taken by selecting three cakes, breaking each across the middle, and from the broken part breaking off a segment across the entire breadth of the cake. The three segments thus obtained should be wrapped up and sealed by the samplers, and sent for analysis as in the case of manures, and three duplicate segments similarly sealed and labelled should be retained by the purchaser.

SOILS.

Dig a little trench about two feet deep, exposing the soil and subsoil. Cut from the side of this trench horizontal scrapings of the soil down to the top of the subsoil. Catch these on a clean board, and collect in this manner about one pound weight of soil taken from the whole surface of the section. Similar scrapings of subsoil immediately below should be taken and preserved separately. Five or six similarly drawn samples should be taken from different parts of the field, and kept separate while being sent to the chemist, that he may examine them individually before mixing in the laboratory.

VEGETABLE PRODUCTS.

Turnips, &c., 40 bulbs carefully selected as of fair average growth.

Hay, straw, ensilage, &c., should be sampled from a thin section cut across the whole stack or silo, and carefully mixed about; about 2 lb. weight is required for analysis.

Grain should be sampled like manures.

DAIRY PRODUCE.

Milk.—Samples of milk from individual cows should be taken direct from the milk-pail. Average samples from a number of cows should be taken immediately after milking. Samples to be tested for adulteration should not be drawn from the bottom or taken from the top of standing milk, but they should be ladled from the vessel after the milk has been thoroughly mixed.

For most purposes a pint-bottle of milk is a large enough sample.

Butter and Cheese.—About quarter-pound samples are required.

WATERS.

When the water is from a well, it should be pumped for some minutes before taking the sample.

If the well has been standing unused for a long time, it should be pumped for some hours, so that the water may be renewed as far as possible.

If the well has been newly dug or cleaned out, it should be pumped as dry as possible, daily, for a week before taking the sample.

Water from cisterns, tanks, ponds, &c., should be sampled by immersing the bottle entirely under the water, and holding it, neck upwards, some inches below the surface. *Water from the surface should not be allowed to enter the bottle.*

Spring or stream water should not be sampled in very wet weather, but when the water is in ordinary condition. Such waters should be sampled by immersing the bottle, if possible; but if not deep enough for that purpose, a perfectly clean cup should be used for transferring the water to the bottle.

When the bottle has been filled the stopper should be rinsed in the water before replacing it.

Interference with or disturbance of wells or springs, or the ground in their immediate vicinity, must be carefully avoided during sampling, and for at least twenty-four hours before it.

After a sample has been taken, it should be sent to the laboratory as speedily as possible.

A description of the source and circumstances of the water should accompany the sample, as the interpretation of the analytical results depends to some extent on a knowledge of such particulars.

N.B.—Stone jars and old wine bottles are unsuitable for conveying samples. Winchester quarts chemically cleaned should be obtained from the laboratory here.

LOCAL ANALYTICAL ASSOCIATIONS.

With the view of encouraging, as well as regulating the conduct of, Local Analytical Associations, the Society, from 1881 to 1893, contributed from its funds towards their expenses a sum not exceeding £250 annually. In view of the passing of the Fertilisers and Feeding Stuffs Act, 1893, which places upon County Councils the duty of repressing the fraudulent sale of manures and feeding-stuffs, it was decided, at a meeting of the Directors on the 6th of December 1893, to discontinue that grant after the 1st of March 1894.

MANURES—THEIR COMPOSITION AND CHARACTERISTICS.

Nitrate of Soda.—A most valuable nitrogenous manure. Perfectly soluble, and immediately available for the nourishment of the plant. Feebly retained by the soil. Rapidly goes down to the subsoil. Benefits deeply-rooting plants. *When much nitrate of soda is frequently applied and unaccompanied by other manures, the soil becomes rapidly exhausted.*

Good samples contain 95 per cent or upwards of pure nitrate of soda, containing about 15½ per cent nitrogen.

Sulphate of Ammonia.—A more concentrated nitrogenous manure than the preceding. Perfectly soluble, but not so rapid in its action as nitrate of soda. It is somewhat firmly retained by the soil, and not so liable as nitrate of soda to be washed out by heavy rains. It is therefore more suitable than nitrate for wet districts.

Good samples contain 95 per cent or more of pure sulphate of ammonia, containing about 19½ per cent nitrogen.

Dried Blood.—A valuable nitrogenous manure, which differs from the above in being insoluble. It must be decomposed in the soil before it yields up its nitrogen to the plant. The nitrogen (10 to 23 per cent) is in the form of albumen.

Horn-dust—Keronikon.—An insoluble nitrogenous manure, containing about 14 per cent nitrogen. Slower than dried blood. Its efficacy as a manure increases the more finely it is ground.

Horn, when in the form of chips or coarse shavings, decomposes extremely slowly, and is not suitable for application as a manure.

Shoddy or Wool-waste.—An insoluble nitrogenous material used chiefly by manure manufacturers as a source of ammonia in dissolved manures. Contains 5 per cent or upwards of nitrogen. It is a useful manure when dissolved.

Leather.—A very insoluble nitrogenous material, yielding about 9 per cent of ammonia, used by manure manufacturers after being melted and ground, but of little value until it has been dissolved.

Peruvian Guano.—A general manure formed of the excrements of fish-eating birds, and containing nitrogenous compounds, phosphates, and potash.

High-class Peruvian guano is rich in nitrogenous matter, a large proportion of which is soluble. A powerful manure, yielding from 7 to 10 per cent nitrogen, a large part of which is immediately available. Phosphates as plant-food, seldom exceeding 30 per cent, but from one-quarter to one-half of the phosphates are soluble. Containing potash, usually about 3 per cent.

Low-class Peruvian guano is poor in nitrogenous matter, yielding only from 2½ to 4 per cent nitrogen. The phosphates are correspondingly high —viz., from 30 to 50 per cent—but the proportion of soluble phosphate is much smaller than in high-class Peruvian guano. Potash occurs to a very small extent—viz., about 1 to 3 per cent.

Genuine Peruvian guano frequently contains a large proportion of stony insoluble matter. It ought to be riddled before purchasing.

Fortified Peruvian Guano,—also called by various names, such as *improved*, *equalised*, &c.—Such guanos are mixtures, with low-class Peruvian guano for a basis. Sulphate of ammonia is added, and perhaps also other nitrogenous matter, to bring them up to the guaranteed analysis.

Dissolved Peruvian Guano.—This is usually Peruvian guano dissolved in sulphuric acid, and fortified with sulphate of ammonia so as to make a strong, active manure.

Ichaboe Guano.—A true guano, of recent formation. It is very rich in nitrogenous matter, which contains from 8 to 13 per cent of nitrogen, but a large part of the nitrogenous matter is in the form of feathers, which are insoluble and of low manurial value, otherwise it resembles high-class Peruvian guano. The total phosphates vary from 18 to 30 per cent, of which from a fourth to a half is usually soluble. There is seldom as much as 2 per cent potash present.

Fish Guano.—Derived from fish-curing yards, and consisting of the heads and offal of fish, dried and ground. Properly speaking, it is not a guano. The name guano is properly applied only to the altered dung of birds and some other animals.

High-class fish-guano contains nitrogenous matter, containing from 8 to 9½ per cent of nitrogen, but it is in the form of insoluble albuminous compounds, which, however, decompose and become available as plant-food. The phosphates range from 18 to 30 per cent, and are all insoluble.

Low-class fish-guanos are substances like the preceding, but containing less nitrogenous matter and more phosphates. They are simply fish-bone manures, with somewhat more ammonia and less phosphate than ordinary bone-meal, and having no real resemblance to a guano.

Fish-guanos are usually impregnated with fish-oil, which detracts from the value of the manure. The oil should not exceed 3 per cent.

Frey-Bentos Guano.—The dried and ground residue and *débris* of animals after the extraction of "Liebig's Extract." It is not a guano. There are various grades of this manure. One contains much bone matter, another a good deal of horn. The best manure is derived from muscular fibre, containing about 11 per cent nitrogen and about 5 per cent phosphate. Sometimes called *meat-meal*. It is a strong nitrogenous manure.

Bone-meal.—Chiefly a phosphatic manure, but containing also nitrogenous matter. Phosphates range from 50 to 55 per cent, according to the purity of the bones, and are insoluble. The nitrogenous matter is also insoluble, and contains from 3½ to 4 per cent of nitrogen. The higher the phosphates the lower the ammonia, and *vice versa*. The finer ground it is, the more speedy is its action.

Bone-dust.—A coarser ground bone than the preceding.

Crushed Bones.—Still coarser ground.

Steamed Bone Flour.—Bones which have been subjected to steam at high pressure for the extraction of glue or gelatine. The residue contains from 56 to 65 per cent phosphates, and about 1 per cent of nitrogen. It is white-coloured and friable, and can be crushed with the hand. It is able to be, and ought to be, ground to a fine flour.

Pure Dissolved Bones.—Bones dissolved in sulphuric acid. It contains usually less than 20 per cent soluble phosphate, about 10 to 20 per cent of insoluble phosphate, and contains from 2½ to 3 per cent nitrogen. A large proportion of the insoluble phosphate may consist of "precipitated" phosphate, which is quite as useful as soluble phosphate.

Dissolved Bone Manures.—These are compound manures, consisting of any mixture of phosphatic and nitrogenous materials which can be dissolved, with some admixture of bone, so as to produce a manure containing from 15 to 30 per cent soluble phosphates, and from 1 to 2½ per cent nitrogen. *Dissolved bone manures* frequently contain some bone material that has not been dissolved.

Superphosphates.—Phosphates dissolved with sulphuric acid. Their composition varies according to the richness of the phosphate from which they are made, and the extent to which they have been dissolved. If mixed with nitrate of soda, except in very small quantity, it causes loss from escape of nitrous fumes, which are injurious when breathed.

High-class superphosphates are made from phosphates containing a high percentage of phosphate of lime, and are very thoroughly dissolved. They should contain between 35 and 40 per cent soluble phosphate.

Low-class superphosphates usually contain 26 to 28 per cent soluble phosphate.

Mineral Phosphates exist in great variety, and contain very various proportions of phosphate of lime—viz., from 20 to 90 per cent. They are of use as manures only when they are ground to the finest flour.

Thomas-Slag, Basic Slag, or Slag Phosphate Meal.—A substance obtained as a waste product in the dephosphorising of steel. It contains from 30 to 40 per cent phosphate of lime, and should be manufactured into a powder of extreme fineness, 80 per cent at least passing through No. 100 wire-cloth. It is more soluble and available for plant-food than ground mineral phosphates. It may be mixed with nitrate of soda, but *not with sulphate of ammonia*, because it contains caustic lime, which would cause loss of ammonia.

Compound Manures.—These are general manures containing nitrogenous matter, phosphates, and potash, and their value depends not only on the amounts of these constituents, but also on their fineness of division, their solubility, and the sources from which their ingredients are derived.

The general character of a few of the more common of these may be indicated thus:—

Turnip Compounds.—These usually contain from 25 to 35 per cent phosphates, of which the half or more is soluble, and nitrogenous matter, containing 1½ to 3 per cent nitrogen, and sometimes 1 or 2 per cent of potash.

Potato Compounds.—These are somewhat like the preceding, but contain usually less phosphate and a little more nitrogen (from 4 to 7 per cent); sometimes they contain no potash, but more frequently about 3 or 4 per cent is present, and in some instances twice as much.

Bean Compounds.—These may contain from 10 to 20 per cent phosphates, nitrogenous matter containing 1 to 3 per cent nitrogen, and usually a considerable proportion of potash, often as much as from 10 to 20 per cent.

Cereal Compounds.—These usually contain about 20 per cent phosphates, mostly soluble, and nitrogenous matter, partly as nitrates, containing 3 to 6 per cent nitrogen, and they may also contain potash.

Grass Compounds.—These are somewhat like the preceding, but may contain less phosphates and more nitrogen, part of which is usually in the form of nitrate.

NOTES REGARDING MANURIAL CONSTITUENTS.

The three important constituents of purchased manures are phosphates, nitrogenous matter, and potash salts.

The phosphates are described in analytical reports as containing phosphoric acid equal to so much "phosphate of lime"; the nitrogenous matter as containing so much nitrogen (equal to so much "ammonia"); the potash salts as containing so much anhydrous "potash."

1. **Phosphates.**—The phosphates occurring in manures are known to chemists as ortho-phosphates, and they are of three kinds, which may be thus represented:—

$\left.\begin{array}{l}\text{Lime}\\\text{Lime}\\\text{Lime}\end{array}\right\}\begin{array}{c}\text{Phosphoric}\\\text{acid.}\end{array}$	$\left.\begin{array}{l}\text{Lime}\\\text{Lime}\\\text{Water}\end{array}\right\}\begin{array}{c}\text{Phosphoric}\\\text{acid.}\end{array}$	$\left.\begin{array}{l}\text{Lime}\\\text{Water}\\\text{Water}\end{array}\right\}\begin{array}{c}\text{Phosphoric}\\\text{acid.}\end{array}$
Tricalcic phosphate.	*Dicalcic phosphate.*	*Monocalcic phosphate.*

Tricalcic phosphate is the natural phosphate occurring in bones and mineral phosphates. It is insoluble in water, and contains, when pure, about 46 per cent phosphoric acid.

Monocalcic phosphate is formed from tricalcic phosphate by dissolving it in acid, which takes away two-thirds of its lime, and replaces it with water. It is soluble in water, and contains, when pure, about 60 per cent phosphoric acid.

Dicalcic phosphate is intermediate between these two, and is formed by their union. This union occurs in the case of phosphates which have been treated with less acid than is required to dissolve them entirely—*e.g.*, in pure dissolved bones, and it is usually called *precipitated* or *reverted* phosphate. It contains, when pure, about 52 per cent phosphoric acid, is insoluble in water, but soluble in certain saline solutions, and is nearly as active manurially as monocalcic phosphate.

"Soluble phosphate" ought, strictly speaking, to mean monocalcic orthophosphate, but according to trade usage it does not. It means that amount of tricalcic phosphate which by means of acid has been converted into monocalcic phosphate, or in other words, the insoluble phosphate that has been rendered soluble. There is a certain advantage in expressing all kinds of phosphate in terms of their equivalent of tricalcic phosphate.

Phosphates of magnesia, of iron, and of alumina, when occurring in small proportion, are not usually estimated separately, but are reckoned as phosphate of lime.

2. **Nitrogen** occurs in manures mostly in three forms—Ammonia salts, nitrates, and albuminoid matter.

Ammonia sulphate (pure) contains $21\frac{1}{5}$ per cent nitrogen, or $25\frac{3}{4}$ per cent ammonia.

Ammonium chloride (pure) contains 26 per cent nitrogen, or 31¾ per cent ammonia.

Nitrate of soda (pure) contains 16½ per cent nitrogen, equal to 20 per cent ammonia.

Albuminoid matter contains from 14 to 16 per cent nitrogen, equal to from 17 to 19 per cent ammonia, most of which sooner or later becomes available as plant-food.

3. **Potash** occurs mostly in the form of soluble salts, and should be reckoned as anhydrous potash (K_2O).

Sulphate of potash (pure) contains potassium = 54 per cent anhydrous potash.

Muriate of potash (pure) or potassium chloride contains potassium = fully 63 per cent anhydrous potash.

FEEDING STUFFS—THEIR COMPOSITION AND CHARACTERISTICS.

These are concentrated forms of fodder, whose value depends upon their *albuminoid matter*, *oil*, and *carbohydrates* (such as starch and sugar).

Linseed (seed of *Linum usitatissimum*, Common Flax).—Bombay seed large and pale; Baltic seed smaller and dark brown, more liable to impurities than Bombay seed; should be crushed and plotted before feeding. Useful in calf fodders, also for milk-giving, and in the last stage of masting. Quantity, 1 to 3 lb. per 1000 lb. L.W.

Linseed-cake.—Much approved feeding cake; merits well known. Home-made cake usually softer and more oily than foreign. Very hard-pressed cake is low in oil, and not so easily eaten and digested. Linseed-cakes usually impure. Chief impurities, locust-beans added to give flavour and relish, rape-seed, less frequently chaff, and weed-seeds from badly screened seed. Should be broken to small pieces before feeding. Quantity, 2 to 6 lb. per 1000 lb. L.W.

Rape-cake (seed of *Brassica napus* and *B. campestris*).—It has a greenish mottled appearance and a bitter taste, which renders it distasteful to cattle at first. Should be given in small quantity to begin with. Not suited for calves. When given to milch cows, the quantity should not exceed 2 or 3 lb. per head per day, or it will give a disagreeable taste to milk and butter. Sometimes very impure. A dangerous impurity is mustard-seed. May be detected by steeping in cold water for some hours, and noting smell of mustard. Danger may be avoided by steeping the ground cake in *boiling* water.

Poppy-cake (seed of *Papaver somniferum*).—Contains a savoury and easily digestible oil. May be fed to cattle in considerable quantity—5 to 8 lb. per head per day. More than 5 lb. per head per day to milch cows detracts from flavour of butter.

Hemp-cake (seed of *Cannabis sativa*).—Not much used for feeding. Not so digestible as the above, owing to abundance of woody fibre (25 per cent). Fed chiefly to horses and sheep. To milch cows not more than 1 lb. per head per day. Apt to grow mouldy in summer.

Sunflower-cake (seed of *Helianthus annuus*).—Relished by stock, and well digested.

Cotton-cake (seed of *Gossypium hirsutum*, &c.). *Undecorticated.*—Best quality from Egyptian and Sea Island seed. Inferior qualities are woolly, and to be avoided. Husk has astringent properties, and is a good cure for *scour*. Should be ground to the size of linseed. Not very digestible, owing to abundance of woody fibre (28 per cent). Should be used freshly made, because liable to mould on keeping.

Decorticated—viz., cotton-cake deprived of the husk.—A very concentrated and powerful bye-fodder. Should be given with caution, crushed fine, and mixed with Indian corn, oats, or other farinaceous food. Large quantity is injurious, and may even be fatal. Very variable in composition. Frequently very hard pressed, and therefore indigestible. When freshly made, softly pressed, and of good quality, it is a valuable bye-fodder. Oil very bland and digestible; used to adulterate olive-oil.

SESAME-CAKE (seed of *Sesamum orientale*).—Seed imported from India. Excellent bye-fodder, easily digested, much relished by all kinds of stock. Favourable for milk-giving, and also for masting. Oil bland and digestible, and much in favour for making margarine.

RICE-MEAL (seed of *Oryza sativa*).—The meal is a bye-product obtained in preparing rice for the market. A very good, safe, and acceptable fodder, but less concentrated than ordinary oilcakes. Varies very much in quality, and frequently adulterated with meal derived from rice husks. Much relished by stock, and useful for milch cows as well as for fattening animals.

RYE-MEAL.—Is the bran of rye, and rather more concentrated than wheat bran. It is very good fodder for cattle and sheep, but not for horses.

BARLEY-BRAN.—The residue obtained in the manufacture of pearl barley. An excellent fodder much liked by cattle; not much liked by sheep.

PALM-KERNEL CAKE.—An excellent, palatable, and easily digested bye-fodder. Especially good for milch cows. Increases the proportion of fat in milk. Puts a finish upon fattening stock. When ground to powder and most of the oil extracted, it is sold as *Palm-kernel meal*, a much relished and digestible bye-fodder. A useful addition to calf-meals.

EARTH-NUT CAKE.—The pressed seed of a leguminous plant (*Arachis hypogæa*). The most concentrated of all cakes, containing from 45 to 50 per cent albumen and 6 to 9 per cent of oil. It is very palatable and digestible. A nutritious fodder when given in moderation. Apt to be contaminated with hair, and liable to rot on keeping if badly made.

FLESH-MEAL.—Residue obtained in the manufacture of *Liebig's Extract of Beef*. A highly nitrogenous bye-fodder, most suitable for enriching a too farinaceous dietary, such as potatoes. Much used in that way as a swine fodder. Easily digested, and readily accepted by cattle.

FISH-MEAL.—Bye-product of fish-curing yards, made chiefly from the heads of cod and tusk. Resembling fish-guano in composition, but somewhat variable. Highly phosphatic, and therefore useful as a bye-fodder to young growing cattle. Ratio, from 1 to 3 lb. per head per day.

HERRING-MEAL.—A very oily fodder, useful as an adjunct to the dietary of milch cows. Quantity, 1 to 4 lb. per head per day.

LOCUST-BEANS—*Carob Bean.*—A sugary fodder, most palatable and acceptable to all kinds of stock. Used to mix with oilcakes and meals, so as to improve their flavour.

DRIED GRAINS.—The draff from distilleries and breweries dried so as to contain only about 10 per cent water. It is a first-class feeding-stuff if of good quality, but the qualities differ considerably.

THE COMPOSITION OF FEEDING STUFFS.

The following is the average composition of genuine cakes and meals in common use:—

	Albuminoids.	Oil.	Carbohydrates.
Linseed-cake	29	11	32
Rape-cake	31	10	30
Poppy-cake	35	10	22
Hemp-cake	30	8½	17
Sunflower-cake	33	9	27
Cotton-cake	28	7½	30
,, (decorticated)	44	15	20
Sesame-cake	37	13	21
Rice-meal	11	10	50
Paisley meal	15	9	60
Maize-meal	10	5	65
Rye-meal	14.5	3½	60
Wheat-bran	13.5	3½	56
Barley-bran	15	5	50
Palm-kernel cake	17	10	41
Palm-kernel meal	19	3½	44
Earth-nut cake (shelled)	47	7½	25
Flesh-meal	71	13	...
Fish-meal	50	4	...
Locust-bean meal	4	2	74
Linseed	21	37	20
Dried grains	20	8	50

USEFUL FACTORS.

Amount of	Multiplied by	Gives corresponding amount of
Nitrogen	1.214	Ammonia.
"	6.3	Albuminoid matter.
"	4.714	Sulphate of ammonia.
"	4.50	Nitric acid.
"	6.071	Nitrate of soda.
Ammonia	.824	Nitrogen.
"	3.882	Sulphate of ammonia.
"	3.706	Nitric acid.
"	5.0	Nitrate of soda.
Potash (anhydrous)	1.85	Sulphate of potash.
"	1.585	Muriate of potash.
Phosphoric acid (anhydrous)	2.183	[1] Phosphate of lime.
" "	1.4	Biphosphate.
" "	1.648	[2] Soluble phosphate.
Soluble phosphate [2]	1.325	[1] Phosphate of lime.
Biphosphate	1.566	"
Lime	1.845	"
"	1.786	Carbonate of lime.
Chlorine	1.648	Chloride of sodium.

[1] Tricalcic ortho-phosphate ($3CaO, P_2O_5$).
[2] Monocalcic ortho-phosphate ($CaO, 2H_2O, P_2O_5$).

FORMS OF GUARANTEE.

GUARANTEE OF MANURE.

I guarantee that the manure called.....................and sold by me to ....contains a minimum of—

Soluble phosphoric acid =Phosphate of lime dissolved............per cent.
Insoluble phosphoric acid=Phosphate of lime undissolved.........per cent.
Potash salts . . =Potash (K_2O) . . . .per cent.
Total nitrogen . . =Ammonia . . . .per cent.

Signature of seller.......................
Date.................18...

GUARANTEE OF FEEDING STUFF.

I guarantee that the feeding-stuff called...............and sold by me to ....contains a minimum of—

.... per cent albuminoids.
.... per cent oil.
.... per cent carbohydrates.

Signature of seller.......................
Date.................18...

UNITS TO BE USED IN DETERMINING THE COMMERCIAL VALUE OF MANURES.[1]

Terms—CASH, including Bags gross weight—not including Carriage.

N.B.—These units are based on the present RETAIL PRICES at principal seaports. When these units are multiplied by the percentages in the analysis of a Manure, they will produce a value representing very nearly the cash price at which one SINGLE TON may be bought in fine sowable condition. Larger purchases may be made on more favourable terms.

For Season 1897.

Items to be Valued.	Guanos.		Scrap Manures.		Bone Manures.			Superphosphates.
	Ichaboe.	Peruvian (Riddled).	Fish.	Flesh.	Bone-Meal.	Steamed Bone Flour.	Dissolved or Vitriolated Bones.	
Phosphates dissolved . . .	1/9	2/-	..	..	..	..	2/4	1/6
" undissolved . .			1/-	1/-	1/-	1/1	1/3	..
Nitrogen	12/9	14/6	9/9	9/9	9/9	9/9	9/9	..
or Ammonia	10/6	12/-	8/-	8/-	8/-	8/-	8/-	..
Prices per ton, Feb. 1897 From	190/-	175/-	80/-	80/-	85/-	85/-	85/-	25°/o=37/6
to	215/-	190/-	120/-	120/-	90/-	90/-	90/-	36°/o=54/-

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[1] See note, p. 43.

CASH PRICES (February 1897).

Manures.

	Guarantee.	Price per Ton.	Unit.
	Per cent.	£ s. d.	
Sulphate of ammonia, 95 per cent*	20 N.	7 15 0	N. = 7/9
Nitrate of soda, 95 per cent*	15½ "	8 5 0	" =10/8
Dried blood	14 "	7 0 0	" =10/-
Muriate of potash, 80 per cent	50 Pot.	8 15 0	Pot. = 3/6
Sulphate of potash, 50 per cent	27 "	4 10 0	" = 3/4
Kainit	12 "	2 0 0	" = 3/4
Ground Charleston phos.	57 Phos.	1 13 6	Phos. = 0/7
Belgian phosphate	40 "	1 0 0	" = 0/6
Algerian phosphate	64 "	1 17 0	" = 0/7
Thomas-slag phosphate	37 "	2 0 0	" = 1/1

Feeding Stuffs.

	Analyses.			Price per Ton in bags.
	Album.	Oil.	Carbo-hydrates.	
				£ s. d.
Linseed-cake	28	9	35	6 15 0
" Canadian	28	8	35	6 0 0
Decorticated cotton-cake	45	10	20	5 15 0
Undecorticated do.	24	7	25	4 0 0
Bean-meal	25	2	50	6 15 0
Locust-bean meal	6	2	70	4 12 6
Dried grains	20	8	50	3 10 0
Barley-bran	15	5	50	3 15 0
Indian corn*	10	5	55	3 7 6
Paisley meal	15	9	60	3 15 0
Linseed (whole)	20	35	14	9 10 0
Linseed-oil	..	..	..	18 0 0
Molasses	..	..	..	4 10 0

* Subject to monthly variation.

CLASSIFICATION OF MANURES.

Fish scrap . .	Finely ground, and containing not more than 3 per cent oil.
Bone-meal . . .	Genuine bone-meal contains from 48 per cent to 55 per cent phosphates, and from 3½ per cent to 4 per cent nitrogen. If phosphates are low nitrogen will be high, and conversely.
Steamed bone-flour .	Ground to flour and containing about 60 per cent phosphates, and about 2 per cent nitrogen.
Dissolved bones . .	Must be pure—*i.e.*, containing nothing but natural bones and sulphuric acid.
Mixtures . . .	To be valued according to the unit values (as given above) of the ingredients of which they are guaranteed *and also found* to be composed, with an addition of from 5 to 10 per cent, according to the fineness of their manufacture.
Thomas-slag and ground phosphates	Fineness of grinding is of paramount importance. The coarsest kind used should be so finely ground that 80 per cent passes through a sieve of 10,000 holes per sq. inch.

INSTRUCTIONS FOR VALUING MANURES.

The commercial values of manures are determined by means of the UNITS in the following manner :—

Take the analysis of the manure, and look for the following substances :—

Phosphates dissolved (or soluble phosphate)
„ undissolved (or insoluble „)
Nitrogen . . . .
Potash . . . .

No other items but these are to be valued.

Should the analysis or the guarantee not be expressed in that way, the chemist or the seller should be asked to state the quantities in these terms.

Suppose the manure is bone-meal :—

An ordinary bone-meal will contain about 50 per cent phosphate and 4 per cent nitrogen. The units for bones are 1s. for phosphate and 9s. 9d. for nitrogen. Therefore the value is—

Insol. phosphate, 50 times 1s.	equal to	£2	10	0	
Nitrogen, 4 „ 9s. 9d.,	„	1	19	0	
	Say	£4	9	0	per ton.

Suppose the manure is dissolved or vitriolated bones :—

It must be guaranteed "pure."

The units in the Schedule are 2s. 4d. for soluble phosphate, 1s. 3d. for insoluble phosphate, and 9s. 9d. for nitrogen.

The analysis will be about 16 per cent soluble phosphate, 20 per cent insoluble phosphate, and 2½ per cent nitrogen. In that case the value would be—

Sol. phosphate, 16 times 2s. 4d.,	equal to	£1	17	4	
Insol. „ 20 „ 1s. 3d.,	„	1	5	0	
Nitrogen, 2½ „ 9s. 9d.,	„	1	4	6	
	Say	£4	7	0	per ton.

Suppose the manure is a superphosphate,—say an ordinary superphosphate, with 28 per cent soluble phosphate and 3 per cent insoluble phosphate. It is valued thus—

Sol. phosphate, 28 times 1s. 6d., equal to, say, £2, 2s. per ton.
Insoluble phosphate is not valued in a superphosphate.

Note.—The units have reference solely to the COMMERCIAL VALUES of Manures, and not to their AGRICULTURAL VALUES.

Thus, in stating soluble phosphate in dissolved bones at 2s. 4d. per unit, and that in superphosphate at 1s. 6d., it is meant that these are the prices per unit at which soluble phosphate can be bought in these two manures; but it does not mean that the soluble phosphate in the one is 10d. per unit better as a manure than that in the other. It is probably no better.

BOTANICAL DEPARTMENT

Consulting Botanist to the Society—A. N. M'ALPINE,
60 John Street, Glasgow.

The Society have fixed the following rates of charge for the examination of plants and seeds for the *bona fide* and individual use and information of members of the Society (not being seedsmen), who are particularly requested, when applying to the Consulting Botanist, to mention the kind of examination they require, and to quote its number in the subjoined schedule. The charge for examination must be paid at the time of application, and the carriage of all parcels must be prepaid.

Scale of Charges.

1. A report on the purity, amount, and nature of foreign materials, 2s.
2. On the germinating power of a sample of seed, 2s.
3. Determination of the species of any weed or other plant, or of any vegetable parasite, with a report on its habits and the means for its extermination or prevention, 5s.
4. Report on any disease affecting farm crops, 5s.
5. Determination of the species of any natural grass or fodder plant, with a report on its habits and pasture or feeding value, 1s.

The Consulting Botanist's Reports are furnished to enable members—purchasers of seeds and corn for agricultural purposes—to test the value of what they buy, and are not to be used or made available for advertising or trade purposes by seedsmen or otherwise.

Instructions for Selecting and Sending Samples.

In sending seed or corn for examination, the utmost care must be taken to secure a fair and honest sample. In the case of grass seeds, the sample would be drawn from the centre of the sack or bag, and in all cases from the bulk delivered to the purchaser. If anything supposed to be injurious or useless exists in the corn or seed selected, samples should also be sent.

When possible, at least one ounce of grass and other small seeds should be sent, and two ounces of cereals or larger seeds. The exact name under which the seed has been bought (but preferably, a copy of the invoice) should accompany the sample.

Grass seeds should be sent at least four weeks, and clover seeds three weeks, before they are to be used.

In collecting specimens of plants, the whole plant should be taken up and the earth shaken from the roots. If possible, the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. Place them in a bottle, or pack them in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

It is strongly recommended that members purchasing seeds should insist—

(1) Upon having from the seller a guarantee stating the purity and germination of the seed supplied.

(2) That the bulk be same as sample.

(3) That it contain not more than 5 per cent other than the species ordered.

If the purity and germination of the seed is not known, it is impossible to tell either its money value or the proper amount to be sown.

It is also strongly recommended that the purchase of prepared mixtures should be avoided, and the different seeds to be used should be purchased separately.

Parcels or letters containing seeds or plants for examination (carriage or postage paid) must be addressed to Professor M'Alpine, Botanical Laboratory, 60 John Street, Glasgow.

PREMIUMS.

GENERAL REGULATIONS FOR COMPETITORS.

1. It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the writers whose papers are published in the 'Transactions.'

2. All reports must be legibly written, and on one side of the paper only; they must specify the number and subject of the Premium for which they are in competition; they must bear a distinguishing motto, and be accompanied by a sealed letter, similarly marked, containing the name and address of the reporter—initials must not be used.

3. No sealed letter, unless belonging to a report found entitled to the Premium offered, or a portion of it, will be opened without the author's consent.

4. Reports for which a Premium, or a portion of a Premium, has been awarded, become the property of the Society, and cannot be published in whole or in part, nor circulated in any manner without the consent of the Directors. All other papers will be returned to the authors if applied for within twelve months.

5. The Society is not bound to award the whole or any part of a Premium.

6. All reports must be of a practical character, containing the results of the writer's own observation or experiment, and the special conditions attached to each Premium must be strictly fulfilled. General essays, and papers compiled from books, will not be rewarded or accepted. Weights and measurements must be indicated by the imperial standards.

7. The Directors, before or after awarding a Premium, shall have power to require the writer of any report to verify the statements made in it.

8. The decisions of the Board of Directors are final and conclusive as to all matters relating to Premiums, whether for Reports or at General or District Shows; and it shall not be competent to raise any question or appeal touching such decisions before any other tribunal.

9. The Directors will welcome papers from any Contributor on any suitable subject not included in the Premium List; and if the topic and the treatment of it are both approved, the writer may be remunerated, and his paper published.

CLASS I.

REPORTS.

SECTION 1.—THE SCIENCE AND PRACTICE OF AGRICULTURE.

FOR APPROVED REPORTS.

1. On the results of experiments for fixing and retaining the volatile and soluble ingredients in Farmyard Manure—Twenty Sovereigns. To be lodged by 1st November in any year.

The Report must detail the treatment adopted to fix and retain these ingredients—the materials used for that purpose, and the quantity and cost thereof—comparative analyses of the manure with and without the treatment, and also a statement of the crops grown with manure and without such treatment, must be given by the Reporter. The experiments to have extended over at least two years and crops.

2. On experiments for ascertaining the actual addition of weight to growing or fattening Stock, by the use of different kinds of food—Twenty Sovereigns. To be lodged by 1st November in any year.

The attention of the experimenter is directed to turnips, carrots, beet, mangelwurzel, potatoes, cabbage, as well as to beans, oats, barley, wheat, Indian corn, linseed, oilcake or rape-cake, and to the effect of warmth and proper ventilation, and the difference between food cooked and raw. The above roots and other kinds of food are merely suggested; competitors are neither restricted to them nor obliged to experiment on all of them.

When experiments are made with linseed and cake, attention should be paid to the comparative advantages, economically and otherwise, of the substance in these two states.

Before commencing the comparative experiments, the animals must be fed alike for some time previously.

The progress of different breeds may be compared. This will form an interesting experiment of itself, for Reports of which encouragement will be given.

N.B.—The experiments specified in the two previous subjects must be conducted over a period of not less than three months. No lot shall consist of fewer than four Cattle or ten Sheep. The animals selected should be of the same age, sex, and breed, and as nearly as possible of the same weight, condition, and maturity. The live weight before and after the experiment must be stated, and if killed, their dead weight and quantity of tallow.

3. On any useful practice in Rural Economy adopted in other countries, and susceptible of being introduced with advantage into Scotland—The Gold Medal. To be lodged by 1st November in any year.

The purposes chiefly contemplated by the offer of this premium is to induce travellers to notice and record such particular practices as may seem calculated to benefit Scotland. The Report to be founded on personal observation.

SECTION 2.—ESTATE IMPROVEMENTS.

FOR APPROVED REPORTS.

1. By the Proprietor in Scotland who shall have executed the most judicious, successful, and extensive Improvement—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

Should the successful Report be written for the Proprietor by his resident factor or farm manager, a Minor Gold Medal will be awarded to the writer in addition to the Gold Medal to the Proprietor.

The merits of the Report will not be determined so much by the mere extent of the improvements, as by their character and relation to the size of the property. The improvements may comprise reclaiming, draining, enclosing, planting, road-making, building, and all other operations proper to landed estates. The period within which the operations may have been conducted is not limited, except that it must not exceed the term of the Reporter's proprietorship.

2. By the Proprietor or Tenant in Scotland who shall have reclaimed within the ten preceding years not less than forty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

3. By the Tenant in Scotland who shall have reclaimed within the ten preceding years not less than twenty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

4. By the Tenant in Scotland who shall have reclaimed not less than ten acres within a similar period—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The Reports in competition for Nos. 3, 4, and 5 may comprehend such general observations on the improvement of waste lands as the writer's experience may lead him to make, but must refer especially to the lands reclaimed—to the nature of the soil—the previous state and probable value of the subject—the obstacles opposed to its improvement—the details of the various operations—the mode of cultivation adopted—and the produce and value of the crops produced. As the required extent cannot be made up of different patches of land, the improvement must have relation to one subject; it must be of profitable character, and a rotation of crops must have been concluded before the date of the Report. *A detailed statement of the expenditure and return* and a certified measurement of the ground are requisite.

5. By the Proprietor or Tenant in Scotland who shall have improved within the ten preceding years the Pasturage of not less than thirty acres, by means of top-dressing, draining, or otherwise, without tillage, in situations where tillage may be inexpedient—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

6. By the Tenant in Scotland who shall have improved not less than ten acres within a similar period—The Minor Gold Medal. To be lodged by 1st November in any year.

Reports in competition for Nos. 5 and 6 must state the particular mode of management adopted, the substances applied, the elevation and nature of the soil, its previous natural products, and the changes produced.

SECTION 3.—HIGHLAND INDUSTRIES AND FISHERIES.

FOR APPROVED REPORTS.

1. The best mode of treating native Wool; cleaning, carding, dyeing, spinning, knitting, and weaving by hand in the Highlands and Islands of Scotland—Five Sovereigns. To be lodged by 1st November 1897.

SECTION 4.—MACHINERY.

FOR APPROVED REPORTS.

SECTION 5.—FORESTRY DEPARTMENT.

FOR APPROVED REPORTS.

1. On Plantations of not less than eight years' standing formed on deep peat-bog—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November 1897.

The premium is strictly applicable to deep peat or flow moss; the condition of the moss previous to planting, as well as at the date of the Report, should, if possible, be stated.

The Report must describe the mode and extent of the drainage, and the effect it has had in subsiding the moss—the trenching, levelling, or other preliminary operations that may have been performed on the surface—the mode of planting—kinds, sizes, and number of trees planted per acre—and their relative progress and value, as compared with plantations of a similar age and description grown on other soils in the vicinity.

2. On the Life-History of any Insect or Tribe of Insects which is injurious to British Forest Trees (*e.g.*, *Scolytus destructor*, of the Elm)—Fifteen Sovereigns. To be lodged by 1st November 1897.

The means for guarding against or destroying these pests to be mentioned, and the Report to be illustrated by original drawings and specimens of the insect and its ravages.

The *Pine Beetle*, the *Fir Weevil*, the *Black Arch Nun* (or *Spruce Moth*), the *Elm-bark Beetle*, and the *Pine Geometer Moth*, are excluded, having been already reported on.

CLASS II.

DISTRICT COMPETITIONS.

REGULATIONS 1897.

The Money Premiums and Medals awarded at District Competitions will be sent direct to the winners in January next. No payments must therefore be made by the Secretary or Treasurer of any local Association.

Grants in aid of DISTRICT COMPETITIONS *for* 1898 *must be applied for before* 1*st November* 1897, *on Forms to be obtained from the Secretary.*

When a Grant has expired, the District cannot apply again for aid for two years.

SECTION I.—GRANTS TO DISTRICT SOCIETIES FOR HORSES, CATTLE, SHEEP, AND PIGS.

1. CLASS OF STOCK—LIMIT OF GRANTS, £340.—The Highland and Agricultural Society will make Grants to District Societies to deal with, as in the opinion of the District Societies the need of each district may require, for such classes of breeding Stock of Horses, Cattle, Sheep, and Pigs as are embraced in the General Show Prize List of the Highland and Agricultural Society. The total sum to be expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £340 in any one year.

2. GRANT TO DISTRICT, £12.—The portion of the Grant to any one District Society shall not exceed the sum of £12 in any one year.

3. CONTINUANCE OF GRANT THREE YEARS—ADVERTISING.—The Grant shall continue for three alternate years, provided always that the District Society shall, in the two intermediate years, continue the competition by offering Premiums equal in amount to not less than one-half the sum given by the Highland and Agricultural Society, and for the same class of Stock as that selected in each previous year to compete for the Highland and Agricultural Society's Prizes. The Prizes when given by the Highland and Agricultural Society must be announced as the Society's gift. If no competition takes place for two years the Grant expires.

4. When it is agreed to hold the General Show of the Society in any district, no provincial show shall be held in that district in the months of June, July, or August.

5. MEDALS.—In the two alternate years the Highland and Agricultural Society will place three Silver Medals at the disposal of the District Societies, for the same classes of Stock as those for which the Money Premiums are offered, provided that not less than three lots are exhibited in the same class.

6. RULES OF COMPETITION.—The Rules of Competition for the Premiums, the Funds for which are derived from Grants of the Highland and Agricultural Society, shall be such as are generally enforced by the Society receiving the Grant for Premiums offered by itself.

7. Area and Parishes—Five Parishes.—When making application for Grants from the Highland and Agricultural Society, the District Society must delineate the area and the number of parishes comprised in the district, and, *except in special cases*, no District Society shall be entitled to a Grant whose show is not open to at least *five* Parishes.

8. Nomination of Members.—The Directors may nominate one or more members of the Highland and Agricultural Society resident in the district, whose duty it shall be to see that the conditions imposed by the Board are complied with.

9. Reports.—Blank Reports will be furnished to the Secretaries of the different District Societies. These Reports must in all details be completed and lodged with the Secretary of the Highland and Agricultural Society on or before the 1st of November next following the competition, both in the years when the Grant is given and in the two intermediate years, for the approval of the Directors of the Highland and Agricultural Society, against whose decision there shall be no appeal. All such Reports must be signed and certified by the Members of the Highland and Agricultural Society nominated under Rule 8.

10. Grants—When Paid.—The Grants made to District Societies will be paid in the January following the competition, by Precepts issued by the Directors of the Highland and Agricultural Society to the winners of the prizes. No payments of these Grants must be made by the Secretary or Treasurer of any District Society. Medals will be issued at the same time.

11. Renewal of Application.—No application for renewal of a Grant to a District Society will be entertained until the expiration of *two years* from the termination of the last Grant.

12. Disposal of Applications.—In disposing of applications for District Grants, the Directors of the Highland and Agricultural Society shall keep in view the length of interval that has elapsed since the expiration of the last Grant, giving priority to those District Societies which have been longest off the list.

13. Dairy Produce.—Upon application being made by District Societies, a limited number of Medals will be placed at the disposal of District Societies for Dairy Produce.

DISTRICTS.

1. Central Banffshire.—*Convener*, John Macpherson, Mulben, Keith; *Secretary*, George Donald, Ladyhill, Grange, Keith. Granted 1893.
2. Strathspey.—*Convener*, John Smith, Inverallan House, Grantown; *Secretary*, D. G. Lawson, Auchnagallen, Grantown. Granted 1893.
3. West Linton.—*Convener*, George Forrest, Edston, Peebles; *Secretary*, F. W. Dyson, 6 Haystoune Place, Peebles. Granted 1893.
4. Islay, Jura, and Colonsay.—*Convener and Secretary*, Robert Cullen, Bridgend, Islay. Granted 1893.
5. West Teviotdale.—*Convener and Secretary*, James Oliver, Thornwood, Hawick. Granted 1893.
6. Kincardineshire.—*Convener*, E. G. Smith, Woodbine, Stonehaven; *Secretary*, A. B. Annandale, Stonehaven. Granted 1892. (In abeyance in 1894.)
7. Aberdour.—*Convener*, James Milne, Pittendrum, Pitsligo, Fraserburgh; *Secretary*, Alex. F. Morrison, Stonebrigg, Aberdour, Fraserburgh. Granted 1895.
8. Vale of Alford.—*Convener*, George Wilken, Waterside of Forbes, Alford, N.B.; *Secretary*, Alex. Dunn, North of Scotland Bank, Alford, N.B. Granted 1895.

9. CAITHNESS.—*Convener*, D. P. Henderson of Stemster, Halkirk, N.B.; *Secretaries*, George Brown, Watten Mains, Watten, and James Sheoch, Bank of Scotland, Wick. Granted 1895.
10. DALKEITH.—*Convener*, Thomas M. Skirving, Niddrie Mains, Liberton; *Secretary*, John Dobbie, Campend, Dalkeith. Granted 1895.
11. BLACK ISLE.—*Convener*, J. Douglas Fletcher of Rosehaugh, Inverness; *Secretary*, Thomas Henderson, Fortrose. Granted 1895.
12. KINGLASSIE.—*Convener and Secretary*, James Inglis, Redhouse, Cardenden. Granted 1894. (In abeyance in 1896.)
13. WEEM. — *Convener*, Robert Menzies, Tirinie, Aberfeldy; *Secretary*, John M. Menzies, Camserney Cottage, Aberfeldy. Granted 1894. (In abeyance in 1896.)
14. NITHSDALE.—*Convener*, William Barber, Tererran, Moniaive; *Secretary*, William Austin, Bank Agent, Thornhill. Granted 1897.
15. KIRRIEMUIR.—*Convener*, T. M. Nicoll, Littleton, Kirriemuir; *Secretary*, Stewart Lindsay, Crawford Park, Kirriemuir. Granted 1897.
16. SUTHERLAND.—*Convener*, Wm. Murray, Inveran Cottage, Invershin, Sutherland; *Secretary*, J. Mackintosh, Proncy, Dornoch. Granted 1897.
17. MORAYSHIRE.—*Convener and Secretary*, James Black of Sheriffston, Elgin. Granted 1894.
18. BUCHAN.—*Convener*, William Ainslie, Parkwell, Mintlaw; *Secretary*, James Smith, Town and County Bank, Strichen. Granted 1896.
19. ROYAL NORTHERN.—*Convener*, George J. Walker, Portlethen, Aberdeen; *Secretary*, George Bruce, 35 Market Street, Aberdeen. Granted 1896.
20. MID-ANNANDALE.—*Convener*, James Lindsay, Whitecastles, Lockerbie; *Secretary*, John A. Mackenzie, Solicitor, Lockerbie. Granted 1896.
21. ARGYLL.—*Convener*, D. C. MacDougall, Ashens, Tarbert, Lochfyne; *Secretary*, Hugh Mundell, Tarbert, Lochfyne. Granted 1894. (In abeyance in 1897.)
22. CARRICK.—*Convener*, Alexander Cross of Knockdon, 19 Hope Street, Glasgow; *Secretary*, David Brown, Solicitor, Maybole. Granted 1894. (In abeyance in 1897.)
23. FORTH.—*Convener and Secretary*, Thomas Nimmo, Lawhead, Forth, Lanark. Granted 1894. (In abeyance in 1897.)

In 1897.

Nos. 1, 2, 3, 4, 5, and 6 are in competition for the last year.
Nos. 7, 8, 9, 10, 11, 12, and 13 are in competition for the second year.
Nos. 14, 15, and 16 are in competition for the first year.
Nos. 17, 18, 19, and 20 compete for local Premiums.
Nos. 21, 22, and 23 are in abeyance on account of the Glasgow Show.

SECTION 2.—GRANTS TO HORSE ASSOCIATIONS, &c., FOR STALLIONS FOR AGRICULTURAL PURPOSES.

1. HORSES—LIMIT OF GRANT, £210.—The Highland and Agricultural Society will make Grants to Horse Associations and other Societies in different districts engaging Stallions for agricultural purposes. The total sum expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £210 in any one year.

2. GRANT TO EACH, £15.—The portion of the Grant to any one Horse Association, &c., shall not exceed the sum of £15 in any one year.

3. Continuance of Grant Three Years—Intermediate Year.—The Grant shall continue for three alternate years, provided always that the Horse Association or Society shall, in the two intermediate years, offer at least a sum equal in amount to that granted by the Highland and Agricultural Society for the hire of a Horse in connection with the Association or Society to whom the Grant is made.

4. Nomination of Members.—The Directors of the Highland and Agricultural Society shall nominate one or more members of the Highland and Agricultural Society, resident in the Districts in which the Society benefited is located, whose duty it shall be to see that the conditions imposed by the Board are complied with.

5. Reports—Penalty for not engaging Horse.—No Grant by the Highland and Agricultural Society to Horse Associations, &c., will be paid unless a report, signed and certified by the members appointed under Rule 4, be furnished to the Highland and Agricultural Society not later than the 1st of November in each year in which the Grant is made, and also in the alternate years, stating that a Horse has been engaged by the Horse Association or other Society to whom the Grant is made; and in the event of a Horse not being engaged in any one year while the provisions of the Grant are in force, the Grant made by the Highland and Agricultural Society will cease.

6. Rules 10 (Time of Payment), 11 (Renewal of Grant), and 12 (Disposal of Applications) applicable to Section 1, shall be applicable to Section 2.

DISTRICTS.

1. Speyside Clydesdale Horse-Breeding Association.—*Convener*, Col. John Gordon Smith of Delnabo, Glenlivet, Ballindalloch; *Secretary*, A. R. Stuart of Inverfiddich, Craigellachie. Granted 1893.
2. Inverness Farmers' Society.—*Convener*, Duncan Forbes of Culloden, Inverness; *Secretary*, D. Gray, National Bank Buildings, Inverness. Granted 1893. (In abeyance in 1895 and 1896.)
3. Turriff Clydesdale Horse Society.—*Convener*, William Paterson, Auldtown of Carnousie, Turriff; *Secretary*, R. Cruickshank, Claymires, Turriff. Granted 1895.
4. Kelso District Clydesdale Horse Society. — *Convener*, W. G. Hogarth, Linton Bankhead, Kelso; *Secretary*, Adam Riddell, 3 Square, Kelso. Granted 1895.
5. West Fife Clydesdale Horse Society.—*Convener*, J. S. Stenhouse, Fod, Dunfermline; *Secretary*, James Millar, Waulkmill, Dunfermline. Granted 1897.
6. Carse of Gowrie and Dundee District Stallion Society.—*Convener*, Capt. Clayhills Henderson of Invergowrie, R.N., Dundee; *Secretary*, Alex. Anderson, Berryhill, Dundee. Granted 1897.
7. Lower Ward of Renfrewshire Stallion Society. — *Convener*, Horatio R. B. Peile, Mansion House, Greenock; *Secretary*, R. Steuart Walker, 11 William Street, Greenock. Granted 1893. (In abeyance in 1895.)
8. Lauderdale.—*Convener*, J. W. Weddell, Lauder Barns, Lauder; *Secretary*, George L. Broomfield, Lauder. Granted 1894.
9. Northern District of Kincardineshire Horse Society.—*Convener*, John Hart, Mains of Cowie, Stonehaven; *Secretary*, A. B. Annandale, Stonehaven. Granted 1894.
10. Orkney Horse-Breeding Society. — *Convener*, James Johnston, Orphir House, Orphir, Orkney; *Secretary*, Robert Scarth, Binscarth, Finstown, Orkney. Granted 1894.

11. STRATHEARN CENTRAL.—*Convener and Secretary*, Robert Gardiner, Henhill, Forteviot. Granted 1894.
12. WESTERN DISTRICT OF MID-LOTHIAN.—*Convener*, William Duncan, S.S.C., 18 York Place, Edinburgh; *Secretary*, John T. Mungle, Commercial Bank of Scotland, West Calder. Granted 1896.
13. STIRLING DISTRICT HORSE SOCIETY.—*Convener*, Peter Dewar, King's Park, Stirling; *Secretary*, Robert Paterson, Hill of Drip, Stirling. Granted 1896.

In 1897.

No. 1 is in competition for the last year.
Nos. 2, 3, and 4 are in competition for the second year.
Nos. 5 and 6 are in competition for the first year.
Nos. 7, 8, 9, 10, 11, 12, and 13 compete for local premiums.

DAIRY PRODUCE.

Upon application being made by District Societies, a limited number of Silver Medals will be placed at the disposal of District Societies for Dairy Produce.

SPECIAL GRANTS.

£40 to the Highland Home Industries Association. — *Secretary*, Miss Muriel K. Mackenzie, Conon House, Conon Bridge, Ross-shire.

£20 to the Ayrshire Agricultural Association, to be competed for at the Dairy Produce Show at Kilmarnock.—*Convener*, The Hon. G. R. Vernon, Auchans House, Kilmarnock; *Secretary*, James M'Murtrie, Ayr. Granted 1872.

£5 to Shetland Agricultural Society.—*Convener*, John Bruce of Sumburgh, Lerwick; *Secretary*, Archibald J. Garrioch, Lerwick. Granted 1893.

£3 to Orkney.—*Secretary*, James Johnston, Orphir House, Orkney. Granted 1883.

MEDALS IN AID OF PREMIUMS GIVEN BY LOCAL SOCIETIES.

The Society, being anxious to co-operate with local Associations, will give a limited number of Silver Medals annually to Societies, not on the list of Cattle, Horse, or Sheep Premiums, in addition to the Money Premiums awarded in the Districts for—

1. Best Bull, Cow, Heifer of any pure breed, or Ox.
2. Best Stallion, Mare, or Gelding.
3. Best Tup, or Pen of Ewes or Wethers.
4. Best Boar, Sow, or Pig.
5. Best Pens of Poultry.
6. Best Sample of any variety of Wool.
7. Best Sample of any variety of Seeds.
8. Best managed Farm.
9. Best managed Green Crop.
10. Best managed Hay Crop.
11. Best managed Dairy.

12. Best Sweet-Milk Cheese.
13. Best Cured Butter.
14. Best sample of Honey, not less than 5 lb., taken without destroying the bees.
15. Best collection of Roots.
16. Best kept Fences.
17. Male Farm Servant who has been longest in the same service, and who has proved himself most efficient in his duties, and to have invariably treated the animals under his charge with kindness.
18. Female Servant in charge of Dairy and Poultry who has been longest in the same service, and who has proved herself most efficient in her duties, and to have invariably treated the animals under her charge with kindness.
19. Best Sheep-Shearer.
20. Most expert Hedge-Cutter.
21. Most expert Labourer at Draining.
22. Most expert Farm Servant at trial of Reaping-Machines.
23. Best Maker of Oat-Cakes.

It is left to the local Society to choose out of the foregoing list the classes for which the Medals are to be competed.

The Medals are granted for two years, and lapse if not awarded in those years.

In 1889 it was resolved that in future no Society shall receive more than two Medals for two years.

Aberdeenshire.

1. AUCHINDOIR, KILDRUMMY, AND TOWIE.—*Convener*, James Macdonald, Mossat, Kildrummy; *Secretary*, James Watt, Muirs, Kildrummy, Mossat. 2 Medals. 1896.

2. FYVIE.—*Convener*, William Mackie, Lewes, Fyvie; *Secretary*, John Hay, Mill of Crichie, Fyvie. 2 Medals. 1897.

3. CROMAR, UPPER DEE, AND DONSIDE.—*Convener*, Sir John F. Clark of Tillypronie, Bart., Tarland; *Secretary*, William Thomson, Banker, Tarland. 2 Medals. 1896.

4. MONQUHITTER.—*Convener and Secretary*, James Cowie, Haremoss, Turriff. 2 Medals. 1897.

Argyllshire.

5. MULL AND MORVERN.—*Convener*, J. H. Munro Mackenzie, Calgary, Dervaig, Mull; *Secretary*, John Macphail, Auchnacrig Farm, Mull. 2 Medals. 1897.

6. POLTALLOCH.—*Convener*, R. A. Meikle, Ri-cruin, Lochgilphead; *Secretary*, Archd. Taylor, Killinochonoch, Lochgilphead. 2 Medals. 1896.

Ayrshire.

7. COLMONELL AND BALLANTRAE.—*Convener*, John Stevenson, Balig, Ballantrae; *Secretary*, J. M'Clymont, Commercial Bank, Ballantrae. 2 Medals. 1897.

8. DARVEL LOCAL BEE-KEEPERS.—*Convener*, George Alston, Loudon Hill, Darvel; *Secretary*, Peter Craig, M.A., Darvel. 2 Medals. 1897.

9. IRVINE.—*Convener*, David Stevenson, Auchengate, Troon; *Secretaries*, James G. Parker, Marress, Irvine; and John Blane, British Linen Company Bank, Irvine. 1 Medal. 1895. (1 Medal awarded in 1896.)

10. KILBIRNIE.—*Convener*, James Kerr, Barrhill, Kilbirnie; *Secretary*, John Howie, Connelstone, Kilbirnie. 2 Medals. 1897.

11. STEWARTON.—*Convener and Secretary*, John Lindsay, Temple House, Stewarton. 2 Medals. 1896.

Berwickshire.

12. BERWICKSHIRE BEE-KEEPERS.—*Convener*, Frank Muirhead, Paxton, Berwick-on-Tweed; *Secretary*, Robert Greig, Auchencrow, Reston. 2 Medals. 1896.

Bute.

13. BUTE.—*Convener*, J. Windsor Stuart, Bute Estate Office, Rothesay; *Secretary*, Thomas W. Alexander, County Buildings, Rothesay. 2 Medals. 1897.

Clackmannanshire.

14. CLACKMANNANSHIRE UNION.—*Convener*, William Alexander, Loanside, Clackmannan; *Secretary*, Alexander Norval, Solicitor, Alloa. 2 Medals. 1896.

Dumfriesshire.

15. SANQUHAR.—*Convener*, James Moffat, Gateside, Sanquhar; *Secretary*, William Murray, British Linen Company Bank, Sanquhar. 2 Medals. 1896.

Edinburghshire.

16. MID-LOTHIAN BEE-KEEPERS.—*Convener*, Captain R. Dundas, yr. of Arniston, Gorebridge; *Secretary*, William Weir, Heriot, Mid-Lothian. 2 Medals. 1897.

Inverness-shire.

17. GLEN URQUHART.—*Convener and Secretary*, Major W. Grant, Seafield Estates Office, Glen Urquhart, Inverness. 2 Medals. 1896.

18. LOCHABER.—*Convener and Secretary*, R. Everard Jones, Fassifern, Fort-William. 2 Medals. 1897.

Kincardineshire.

19. FETTERCAIRN.—*Convener*, Hon. Charles Forbes Trefusis, Fettercairn House, Fettercairn; *Secretary*, William Crichton, Castleton of Kincardine, Laurencekirk. 2 Medals. 1896.

Lanarkshire.

20. SHOTTS CALDERWATERHEAD.—*Convener*, Peter Forrest, The Bank, Shotts; *Secretary*, Thomas Loudon, Muirhouse, Cleland. 2 Medals. 1897.

Perthshire.

21. ARDOCH.—*Convener*, John M'Ewen, Cambushinie, Braco; *Secretary*, John Miller, Over Ardoch, Braco. 2 Medals, 1897.

Ross-shire.

22. EASTER ROSS.—*Convener and Secretary*, D. Cameron, Commercial Bank, Tain. 2 Medals. 1897.

Stirlingshire.

23. DENNY AND DUNIPACE.—*Convener*, Provost Ferguson, Denny; *Secretary*, Alex. Hendry, Solicitor, Denny. 2 Medals. 1897.

24. EASTERN DISTRICT OF STIRLINGSHIRE.—*Convener*, W. T. Malcolm, Dunmore Home Farm, Larbert; *Joint-Secretaries*, James Lennox and William Wright, New Market St., Falkirk. 2 Medals. 1897.

Applications from other Districts must be lodged with the Secretary of the Society *by* 1*st November next.*

RULES OF COMPETITION.

1. All Competitions must be at the instance of a local Society.
2. The classes for which Medals are granted must be in accordance with the list at page 50. The Committee shall select the classes, and specify them in the return.
3. A Committee of Management shall be appointed, and the Convener of the Committee must be a Member of the Highland and Agricultural Society.
4. The Money Premiums given in the District must be not less than £2 for each Medal claimed.
5. The Medal for Sheep-Shearing shall not be awarded unless there are three competitors, and it shall always accompany the highest Money Premium. There must not be fewer than two competitors in all the classes.
6. Blank reports will be furnished to all the Conveners and Secretaries of the different Districts. These must, in all details, be completed and lodged with the Secretary *on or before the* 1*st of November next*, with the exception of green crop reports, which must be forwarded on or before the 20th of December, for the approval of the Directors, against whose decisions there shall be no appeal.
7. When a grant has expired, the District shall not be eligible to apply again for aid for two years; and if no competition takes place in a District for two years, the grant shall expire.

PLOUGHING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first or highest Premium at Ploughing Competitions, provided a Report in the following terms is made to the Secretary, within one month of the Competition, by a Member of the Society:—

FORM OF REPORT.

I, of , Member of the Highland and Agricultural Society, hereby certify that I attended the Ploughing

Match of the Association at in the county of on the when ploughs competed; of land were assigned to each, and hours were allowed for the execution of the work. The sum of £ was awarded in the following proportions, viz.:—

[*Here enumerate the names and designations of successful Competitors.*]

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Ploughing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.
2. The title of such Society or Association, together with the name and address of the Secretary, must be registered with the Secretary of the Highland and Agricultural Society, 3 George IV. Bridge, Edinburgh.
3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.
4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.
5. A Member can only report one Match; and a Ploughman cannot carry more than three Medals in the same season.
6. To warrant the grant of the Medal there must have been twelve ploughs in Competition, and Three Pounds awarded in Premiums by the local Society. The Medal to be given to the winner of the first or highest prize.
7. Ploughmen shall not be allowed any assistance, and their work must not be set up nor touched by others; on land of average tenacity the ploughing should be at the rate of an imperial acre in ten hours, and attention should be given to the firmness and sufficiency of the work below more than to its neatness above the surface.

CLASS III.

COTTAGES AND GARDENS.

The following Premiums are offered for Competition in the Parishes after mentioned.

The Premiums are granted for two years.

PREMIUMS FOR BEST KEPT COTTAGES AND GARDENS.

1.	Best kept Cottage	£1	0	0
	Second best	0	10	0
2.	Best kept Cottage Garden	1	0	0
	Second best	0	10	0

RULES OF COMPETITION.

1. Competitions may take place in the different parishes for Cottages and Gardens, or for either separately.
2. The occupiers of Lodges at Gentlemen's Approach Gates and Gar-

deners' Houses are excluded, as well as others whom the Committee consider, from their position, not to be entitled to compete. The inspection must be completed by the 1st of October. In making the inspection, the Conveners may take the assistance of any competent judges.

3. It is left to the Committee of the District to regulate the maximum annual rent of the Cottages, which may, with the garden, be from £5 to £7.

4. To warrant the award of full Premiums, there must not be fewer than three competitors in each class. If there are less than three competitors in each class, only half Premium will be awarded.

5. A person who has gained the highest Premium cannot compete again.

6. If the Cottage is occupied by the proprietor, the roof must be in good repair; if the roof is thatch, it must be in good repair, though in the occupation of a tenant. The interior and external conveniences must be clean and orderly; the windows must be free of broken glass, clean, and affording the means of ventilation. Dunghills, and all other nuisances, must be removed from the front and gables. In awarding the Cottage Premiums, preference will be given to Competitors who, in addition to the above requisites, have displayed the greatest taste in ornamenting the exterior of their houses, and the ground in front and at the gables.

7. In estimating the claims for the Garden Premiums, the judges should have in view—the sufficiency and neatness of the fences and walks; the cleanness of the ground; the quality and choice of the crops; and the general productiveness of the garden.

8. Reports, stating the number of Competitors, the names of successful parties, and the nature of the exertions which have been made by them, must be transmitted by the Conveners to the Secretary *on or before the* 1*st November next.*

9. When a grant has expired, the District cannot apply again for aid for two years.

Parishes desirous of these Premiums must lodge applications with the Secretary *on or before the* 1*st November next.*

MEDALS FOR COTTAGES AND GARDENS OR GARDEN PRODUCE.

The Society will issue annually two Minor Silver Medals to a limited number of local Associations or individuals, who at their own expense establish Premiums for Cottages and Gardens under £15 of Rent. One of the Medals may be awarded for best kept Cottage, and the other for the best kept Garden or Flower Plot, or Garden Produce, the produce of the cottager's own garden.

Local Associations or individuals desirous of these Medals, must lodge applications with the Secretary *on or before the* 1*st November next.*

The Medals are granted for two years.

Dumbartonshire.

1. OLD KILPATRICK.—*Convener*, William Stewart, Milton, Duntocher; *Secretary*, David Watson, Co-operative Buildings, Dalmuir. 2 Medals. 1896.

Edinburghshire.

2. CURRIE.—*Convener*, ; *Secretary*, John Bookless, Currie. 2 Medals. 1897.

Fifeshire.

3. KINGSKETTLE.—*Convener*, ; *Secretary*, David Beveridge, Station Road, Kettle. 2 Medals. 1895. (In abeyance in 1896.)

Haddingtonshire.

4. EAST LOTHIAN.—*Convener*, The Master of Polwarth, Humbie House, Upper Keith; *Secretary*, D. S. Allan, jun., 55 Cour Street, Haddington. 2 Medals. 1897.

Inverness-shire.

5. ERCHLESS.—*Convener*, J. B. Grant, Erchless, Beauly; *Secretary*, A. MacIntosh, Gardener, Erchless, Beauly. 2 Medals. 1896.

Kincardineshire.

6. DURRIS.—*Convener*, Thomas Braid, Durris, Drumoak, Aberdeen; *Secretary*, Alex. Macdonald, M.A., Crossroads, Durris, Aberdeen. 2 Medals. 1897.

Kirkcudbrightshire.

7. KIRKPATRICK-DURHAM.—*Convener*, ; *Secretary*, David C. G. Johnston, Kirkpatrick-Durham, Dalbeattie. 2 Medals. 1895. (In abeyance in 1896.)

Lanarkshire.

8. BIGGAR.—*Convener*, Robert Cadzow, Borland, Biggar; *Secretary*, William A. Low, West End, Biggar. 2 Medals. 1897.

9. CAMBUSLANG.—*Convener*, John Speir, Newton Farm, Newton, Glasgow; *Secretaries*, H. & J. M. Aitchison, Rosebank Buildings, Cambuslang. 2 Medals. 1896.

10. CARNWATH.—*Convener*, J. B. Smith, Kaimend, Carnwath; *Secretary*, George C. Murray, Schoolhouse, Carnwath. 2 Medals. 1897.

11. MIDDLE WARD OF LANARKSHIRE FLORAL—*Convener*, Robert Jack, Banker, Motherwell; *Secretary*, George Bowman, Calder Street, Motherwell. 2 Medals. 1896.

Nairnshire.

12. AULDEARN AND ARDCLACH.—*Convener*, ; *Secretaries*, A. J. Mackintosh, Auldearn, and F. Duff, Kinsteary, Auldearn. 2 Medals. 1896.

13. CAWDOR.—*Convener*, J. S. Robertson, Cawdor Estate Office, Nairn; *Secretary*, David Reid, jun., Cawdor, Nairn. 2 Medals. 1897.

Perthshire.

14. ALYTH.—*Convener*, Andrew Bruce, Jordanston, Meigle; *Secretary*, A. Robertson, Loyal Road, Alyth. 2 Medals. 1897.

15. BLAIRGOWRIE AND RATTRAY.—*Convener*, John Panton of Dalnagairn, Blairgowrie; *Secretary*, John Kidd, 14 Newton Street, Blairgowrie. 2 Medals. 1896.

16. LOGIEALMOND AND GLENALMOND.—*Convener*, Lord Balvaird, Scone Palace, Perth; *Secretary*, John G. M'Laggan, Woodburn Cottage, Glenalmond, Perth. 2 Medals. 1897.

Renfrewshire.

17. KILBARCHAN.—*Convener*, Robert Wilson, Manswraes, Kilbarchan; *Secretary*, Archd. C. Buchanan, 4 Ewing Street, Kilbarchan. 2 Medals. 1897.

18. KILMALCOLM.—*Convener*, H. R. B. Peile, Mansion House, Greenock; *Secretary*, James Brodie, Gas Works, Kilmalcolm. 2 Medals. 1897.

Ross-shire.

19. LOCHBROOM.—*Convener*, ; *Secretary*, Hay Mackenzie, Bank Agent, Ullapool. 2 Medals. 1896.

Stirlingshire.

20. MILTON.—*Convener*, Charles M. King, Antermony House, Milton of Campsie; *Secretary*, John Gillespie, Milton of Campsie. 2 Medals. 1896.

21. POLMONT.—*Convener*, David Mitchell of Millfield, Polmont; *Secretary*, David Pollock, Gardenhead, Polmont. 2 Medals. 1896.

Wigtownshire.

22. INCH.—*Convener*, The Earl of Stair, Lochinch, Castle Kennedy; *Secretary*, Thomas C. Greig, Rephad, Stranraer. 2 Medals. 1897.

REGULATIONS.

1. Competitions may take place in the different districts for Cottages and Gardens, or for either separately. The one Medal may be offered for Cottages, and the other for Gardens or Garden Produce, but the two cannot be given in one class.

2. The annual value of each Cottage, with the ground occupied in the parish by a Competitor, must not exceed £15. The occupiers of Lodges at Gentlemen's Approach Gates, and Gardeners in the employment of others, are not entitled to compete.

3. If Competition takes place for Garden Produce in place of the best kept Garden, such produce must be *bona fide* grown in the Exhibitor's Garden, and he will not be allowed to make up a collection from any other Garden.

4. To warrant the award of a Medal, there must not be fewer than three Competitors.

5. Blank reports will be furnished to the Conveners and Secretaries of the different Districts. These must, in all details, be completed and lodged with the Secretary *on or before the 1st November next*, for the approval of the Directors, against whose decisions there shall be no appeal.

6. When a grant has expired, the District cannot apply again for aid for two years, and if no competition takes place in a District for two years the grant expires.

Address for Telegrams—"SOCIETY," EDINBURGH.

Subject to Orders issued by the Board of Agriculture

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

GENERAL SHOW OF STOCK AND IMPLEMENTS
ON
THE GLASGOW GREEN
GLASGOW

ON 6TH, 7TH, 8TH, AND 9TH JULY 1897.

LAST DAYS OF ENTRY.

IMPLEMENTS AND OTHER ARTICLES—Monday, 3d May.

STOCK, POULTRY, AND DAIRY PRODUCE—Monday, 31st May.

No Entry at ordinary fees taken later than those which are received at the Society's Office, Edinburgh, by first post, or 10 o'clock, on Monday morning (31st May). Post Entries for Cattle, Horses, Sheep, and Swine taken on payment of 10s. additional for each entry (Poultry at double fees) till Wednesday morning (2d June), at the Society's Office, Edinburgh, at 10 o'clock.

COVERED BOOTHS FOR OFFICES—Monday, 31st May.

President of the Society.
LORD BLYTHSWOOD.

Chairman of the Board of Directors.
REV. JOHN GILLESPIE, LL.D.

Convener of the Local Committee.
R. SINCLAIR SCOTT, BURNSIDE, LARGS.

The District connected with the Show comprises the Counties of Lanark, Ayr, Argyll, Renfrew, and Bute.

REGULATIONS.

GENERAL CONDITIONS.

1. The Competition, except where otherwise stated, is open to Exhibitors from all parts of the United Kingdom.

2. Every Lot must be intimated by a Certificate of Entry, lodged with the Secretary *not later than Monday, 3d May, for Implements and other Articles, and Monday,* 31*st May, for Stock, Poultry, and Dairy Produce.* *Entries.*

No Entry taken at ordinary fees later than those which are received at the Society's Office by first post, or 10 o'clock, on Monday morning, 31st May. Post Entries for Cattle, Horses, Sheep, and Swine taken on payment of 10s. additional for each entry (Poultry at double fees) till Wednesday morning (2d June), at the Society's Office, Edinburgh, at 10 o'clock. Printed forms of Entry will be issued on application to the Secretary, No. 3 George IV. Bridge, Edinburgh. Admission Orders will be forwarded to Exhibitors, by post, previous to the Show.

Protests. 3. Protests against the awards of the Judges, or against a violation of the judging regulations, must be lodged with the Secretary, at his Office in the Showyard, not later than 9 A.M. on Wednesday, the second day of the Show, and parties must be in attendance at the Committee Room, in the Showyard, at 9.30 A.M. that day, when protests will be disposed of. All protests must be accompanied by a deposit of £2, 2s., and if not sustained the sum may be forfeited at the discretion of the Directors.

4. Protests lodged for causes which the protester produces no good evidence to substantiate will render him liable to be reported to the Board of Directors, with the view, if they see reason, of his being prohibited from again entering Stock for a General Show.

Society not liable. Rejecting Entries. 5. The Society shall not be liable for any loss or damage which Stock, Poultry, Dairy Produce, Implements, or other articles may sustain at the Show, or in transit. The Society reserves the right to reject or cancel any entry or prohibit the exhibition of any entry.

Decisions of Board. 6. The decisions of the Board of Directors are final in all questions respecting Premiums and all other matters connected with the Show, and it shall not be competent for any Exhibitor to appeal against such decisions to, nor seek redress in respect of them from, any other tribunal.

Covered Booths. 7. Covered Booths for Offices (9 feet by 9 feet), purely for business, not for exhibition of goods, can be had for £3, 10s. to Members and £5 to Non-Members. Intimation to be made to the Secretary on or before the 31st of May. Those applying after that date to pay double Entry Money, but no application can be received later than 18th June.

Lights and Smoking. 8. No lights allowed in the Yard at night, and Smoking is strictly prohibited within the Sheds. Those infringing this Rule shall be liable to a fine of 10s.

Water. 9. As the command of water in the Yard is limited, it is particularly requested that waste be avoided.

Restoring Turf. 10. When the ground requires to be broken, the turf must be carefully lifted and laid aside, and the surface must be restored to the satisfaction of the Society, and at the expense of the Exhibitor.

Subjection to Rules. 11. All persons admitted into the Showyard shall be subject to the Rules and Orders of the Directors.

Powers of Stewards. 12. The Stewards have power to enforce the Regulations of the Society in their different departments, and to bring to the notice of the Directors and Secretary any infringement thereof.

Attendants. 13. All persons in charge of Stock or other Exhibits shall be subject to the orders of the Secretary and Stewards.

Violation of Rules. 14. The violation by an Exhibitor of any one of the Regulations shall render him liable to the forfeiture of all Premiums awarded to him, or of such a portion as the Directors may ordain, and also liable to be disqualified from again, or for a certain number of years, exhibiting at the Shows of the Society; or to have his case otherwise disposed of as the Directors may determine.

Railway Passes. 15. Railway Passes for Stock and Implements are issued to Exhibitors before the Show along with their Tickets of Admission.

Removal of Exhibits. 16. No animal or article can be withdrawn before the formal closing of the Show at 5 P.M. on Friday; Steam Engines not till 6 o'clock. Stock and Implements may remain in the Yard till Saturday afternoon.

17. The Premiums awarded, except those withheld till birth of calf or foal is certified, will be paid in the November following the Show, and, with the exception of the Tweeddale Gold Medal, Special Challenge Cups, and the Silver Medals, may be taken either in money or in plate. *Payment of Prizes.*

STOCK AND POULTRY.

18. Poultry and Stock will be admitted on Monday, the day before the opening of the Show, and, with the exception of Horses, must be in the Yard before 12 o'clock that night. Horses must be in before 8 o'clock on the morning of Tuesday, except those entered for Jumping only, regarding which special Regulations will be found beside the list of prizes for Jumping. Judging begins at 10 A.M. on Tuesday. Exhibited on Tuesday, Wednesday, Thursday, and Friday. Stock may be admitted on the Saturday preceding the Show, but only by sending two days' prior notice to the Secretary. *Admission of Stock.*

19. An animal which has gained a first Premium at a General Show of the Society cannot again compete in the same class, but may be exhibited as Extra Stock. *Former Winners.*

20. All animals, except calves, foals, and lambs shown with their dams, must be entered in the classes applicable to their ages, and cannot be withdrawn after entry, or other animals be substituted in their place. *No substitution of animals.*

21. For prizes given by the Society, no animal shall be allowed to compete in more than one class; but this Rule does not apply to the Jumping and Driving Competitions. *One class only.*

22. Shorthorn, Aberdeen-Angus, Galloway, and West Highland animals must be entered in the herd-books, or the Exhibitor must produce evidence that his animal is eligible to be entered therein. *Herd-books.*

23. Stock must be *bona fide the property of* the Exhibitor on the last day of Entry. *Ownership.*

24. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor. The Society shall have power at any time to call upon an Exhibitor to furnish proof of the correctness of any statement in his entry.

25. The name of the Breeder, if known, must be given, and if the Breeder is not known, a declaration to that effect, signed by the Exhibitor, must be made on the Entry Schedule, and no pedigree will be entered in the Catalogue when the Breeder is unknown. *Particulars of entries.*

26. Should it be proved to the satisfaction of the Directors that an animal has been entered under a false name, pedigree, or description, for the purpose of misleading the Directors or Judges as to its qualification or properties, or that information required in the Schedule and known or easily ascertained by the Exhibitor has been withheld, such animal may be disqualified either before or after a prize has been awarded to it, and the case may be reported to the Directors, in order that the Exhibitor may be disqualified from again competing at the Society's Shows, or his case otherwise disposed of as the Directors may determine. *Entries disqualified.*

27. When an animal has previously been disqualified by the decision of any Agricultural Association in the United Kingdom, such disqualification shall attach, if the Exhibitor, being aware of the disqualification, fail to state it, and the grounds thereof, in his entry, to enable the Directors to judge of its validity. Any person who is disqualified from exhibiting at any Show in the United Kingdom shall be prohibited from exhibiting at any General Show of the Society, unless with the special consent of the Board.

28. All Horses or Ponies entered in classes in which a particular height is stated shall before being judged be measured with their shoes on. No subsequent measuring or alteration of shoes will be permitted. *Height of Horses.*

Overfeeding. 29. Breeding Stock must not be shown in an improper state of fatness, and the Judges are requested not to award Premiums to overfed animals; and no Cattle or Sheep which have been exhibited as Fat Stock at any Show are eligible to compete in the Breeding Classes for the Society's Prizes.

Parades. 30. Horses and Cattle must be paraded at the times stated in the Programme of the Show, and when required by the Stewards, and under their direction. Prize and commended animals will receive two rosettes each, which must be attached to the head of the animal, one on each side. Attendants must be beside their animals *twenty minutes before the hour of Parade*, and be ready to proceed to the ring immediately on receiving the order of the Stewards. Infringement of this Rule, or failure of any attendant to obey the orders of the Society's officials, will render the Exhibitor liable to a fine of 20s., and to the forfeiture of any or all of the Prizes awarded to him at this Show.

Responsibility of Exhibitors. 31. Exhibitors shall be answerable for all acts, whether committed by themselves, their servants, or others in charge of their Stock, and shall be responsible for the condition of their animals during the whole time they remain in the Showyard.

Authority for removal. 32. No animal shall be taken out of its stall after 10 A.M. during the Show except by order of the Stewards, or with permission of the Secretary. Those infringing this Rule shall be liable to a fine of 10s.

Sires. 33. Aged Bulls and Stallions must have had produce, and, along with two-year-old Bulls, three-year-old Colts, and two-shear and aged Tups, have served within the year of the Show.

Cows. 34. All Cows must have had calves previous to the Show, and when exhibited they must either be in milk or in calf: if in milk, birth must have been within 9 months of the Show; if in calf, birth must be certified within 9 months after the Show. This Rule does not apply to animals in Family Groups. Ayrshire Heifers in calf must produce a calf within three months of the first day of the Show.

Family Groups. 35. Cows in Family Groups must have had calves previous to the Show, and when exhibited they must be either in milk or in calf. Two-year-old Heifers in Family Groups must be certified to have been served before the Show, except Highland Heifers, which need not be served till 3 years old.

Ayrshire Cows. 36. All Milk Cows of the Ayrshire breed must be in the Yard on the evening of Monday, the day before the opening of the Show, before 8 o'clock, and they will be inspected by the Veterinary Surgeon, or other official of the Society, between 7 and 9 o'clock, to see if they have been milked dry; and if not, they must be milked under his direction. After the judging, all Milk Cows must be milked morning and evening.

Tampering with animals. 37. Any artificial contrivance or device of any description found on or proved to have been used on an animal, either for preventing the flow of milk or for any other improper purpose, will disqualify that animal from being awarded a Premium, and the Owner of said animal shall be prohibited from again entering Stock for any of the Society's General Shows, for such a period as the Directors may see fit.

In-calf Heifers. 38. Two-year-old Heifers of the Shorthorn, Aberdeen-Angus, and Galloway breeds, and three-year-old Highland Heifers, must be in calf when exhibited, and the Premiums will be withheld till birth be certified, which must be within 9 months after the Show.

39. Animals of any age that have had a calf must be shown as Cows.

Mares. 40. Agricultural Mares with foal at foot must have produced foals after 1st January of the year of the Show. In the case of a Mare whose foal has died, she shall without further entry be eligible to compete among the Yeld Mares. Agricultural Yeld Mares must produce a foal within 12 months from the first day of the Show.

Calves and Foals. 41. With reference to Regulations 34 and 38, birth of at least a seven months' calf must be certified; and in regard to Regulation 40, birth of at least a nine months' foal; or in the case of death, a Veterinary Surgeon's certificate must be produced certifying that at the time of death the animal was so far advanced with calf or foal that if it had lived it would have produced a calf or foal, as required by Rules 34, 38, 40, and 41.

Concealing animals.

42. No rug shall be hung up so as to conceal any animal in a horse-box or stall, except with special permission of the Steward of that department.

Hunters.

43. Horses entered as Hunters must be jumped if required by the Judges.

Soundness of Horses.

44. Judges are particularly requested to satisfy themselves, as far as possible, regarding the soundness of all Horses before awarding the Prizes, and to avoid giving a preference to animals showing symptoms of hereditary diseases. The Judges may consult the Society's Veterinary Surgeon if they deem it expedient. No protests on veterinary grounds will be received.

Ewes.

45. All Ewes must have reared lambs in the year of the Show; and Ewes of the Blackfaced and Cheviot breeds must be in milk, and have their lambs at foot.

Clipping.

46. Sheep must have been clipt bare after 1st January of the year of the Show, and the Judges are instructed to examine the fleeces of the Sheep selected for Prizes, and to cast those on which they find any of the former fleece. This Rule does not apply to Cheviot sheep.

Sows.

47. Sows must have reared pigs in the year of the Show or be in pig; and Pigs must belong to the same litter, and be uncut.

Poultry.

48. In Poultry the Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Securing Cattle.

49. Bulls must be secured by nose-rings, with chains or ropes attached, or with strong halters and double ropes. All Cattle must be tied in their stalls.

Feeding appliances.

50. Servants in charge of Stock must bring their own buckets or pails, and a piece of rope or sheep-net to carry their forage. Mangers, sheep and pig troughs, will be provided.

Accommodation for animals.

51. Loose-boxes will be provided for Stallions, three, two, and one year-old entire Colts; for one-year old Fillies, and for Mares with foals at foot; closed-in stables for all the other Horses, and covered accommodation for the whole of the other Live Stock. Stalls (floored) for attendants on Cattle, Horses, and Sheep will be provided at same rates as those charged for Stock.

Fodder.

52. Five days' supply of straw, hay, grass, and tares will be provided free by the Society. Any additional fodder or other kinds of food required will be supplied at fixed prices in the Forage-yard. Any servant removing bedding from an adjoining stall will be fined in double the amount taken. Exhibitors may fetch their own cake or corn to the Yard, but not grass, tares, hay, or straw. Coops, food, and attendance for Poultry will be provided by the Society.

Removal.

53. Cattle, Sheep, Swine, or Poultry cannot be removed from the Yard till 5 P.M. on Friday, the last day of the Show, except on certificate by the Veterinary Surgeon employed by the Directors, countersigned by the Steward of the department and the Secretary.

Withdrawal of horses over night.

54. Horses may be withdrawn at the close of the Show on Tuesday, Wednesday, and Thursday, on a deposit of £5 for each animal, which shall be forfeited, along with any prize money it may have gained, if the animal is not brought back. They must return between 7 and 7.30 the following morning, and those not in before 8 shall forfeit 10s. Horse passes to be applied for at the Committee Room between 5 and 6 P.M. on Tuesday, and the deposit, unless forfeited in whole or in part, will be returned between 12.30 and 2.30 on Friday.

Order in removal.

55. When the Stock is leaving the Yard, no animal is to be moved till ordered by those in charge of clearing the Yard. Those transgressing this Rule shall be liable to a fine of 10s., and detained till all the other Stock is removed.

JUDGING STOCK AND POULTRY.

Opening Gates. 56. On Tuesday, the first day of the Show, no person will be admitted, except Servants in charge of Stock, till 8 A.M., when the Gates are opened to the public.

Judging. 57. The Judges will commence their inspection at 10 A.M. The spaces reserved for the Judging will be enclosed, and no encroachment shall be permitted. In no case shall a Premium be awarded unless the Judges deem the animals to have sufficient merit; and where only one or two lots are presented in a section, and the Judges consider them unworthy of the Premiums offered, it shall be in their power to award a lower prize, or to suggest the removal of any lot which appears to them unworthy of a place in the Yard.

Commendations. 58. In addition to the Premiums, the Judges are authorised to award three Commendations in each section (except Poultry, where only two Prizes and one Commendation are to be awarded), if the entries are numerous and the animals of sufficient merit. These Commendations consist of—Very Highly Commended, Highly Commended, and Commended.

Ayrshire Cows and Heifers. 59. Ayrshire Cows which have not calved before the Show, whether entered in the class for Cows in Milk or for Cows in Calf, shall be judged along with the Cows in Calf, and Ayrshire Cows or Heifers which have calved before the Show—in whichever of the two classes entered—shall be judged along with Cows in Milk.

Attending Members. 60. One Member of Committee and one or two Directors shall attend each section of the Judges. It will be their duty to bring the animals out to the Judges and to see that no obstruction is offered to them, and that the space reserved for them is not encroached upon; to ticket the prize animals; to send the Nos. of prize animals to the Award Lectern; to assist the Judges in completing their return of awards; and should any difficulty arise, to communicate with the Stewards or Secretary.

61. It shall not be competent for any Exhibitor, nor for his Factor or Land-Steward, to act as a Judge or attending Member in any class in which he is competing.

DAIRY PRODUCE.

62. Dairy Produce will be received in the Showyard on Monday, the day before the opening of the Show, and till 8 A.M. on Tuesday, the first day of the Show. Judged at 10 A.M. on Tuesday. Exhibited Tuesday, Wednesday, Thursday, and Friday.

63. Dairy Produce must have been made on the Exhibitor's farm this year. No Exhibitor shall show more than one lot in each class. At least 1 cwt. of the variety of Butter exhibited must have been made during the Season. The lots must be fair samples. No lot can be removed from the Yard till 5 P.M. on Friday, the last day of the Show. The Society undertakes no responsibility for the receipt or despatch of exhibits.

STALL RENT.

64. The following rates shall be paid by Exhibitors when making their Entries:—

	Members.		Non-Members.	
	s.	*d.*	*s.*	*d.*
Stalls for Cattle, each	15	0	25	0
Boxes for Stallions over 12 hands, and for 3 and 2 year-old entire Colts	30	0	40	0
Boxes for Mares, over 12 hands, with Foal at foot	30	0	40	0
Boxes for one-year-old entire Colts and Fillies .	20	0	30	0
Boxes for Stallions, 12 hands and under . .	20	0	30	0

	Members.		Non-Members.	
	s.	*d.*	*s.*	*d.*
Boxes for Mares, 12 hands and under, with Foal at foot	20	0	30	0
Boxes for other Horses	25	0	35	0
Stalls for Mares or Geldings, 12 hands and under	15	0	20	0
Stalls for all other Horses, each	20	0	30	0
Shed Accommodation for Machines for driving competitions, each	5	0	10	0
Sheep, per pen	10	0	15	0
Wool, each entry	2	6	5	0
Swine, per pen	10	0	15	0
Poultry, each entry	3	0	5	0
Dairy Produce, each entry	4	0	6	0
Stalls for Attendants and Shepherds, same rates as above.				
Covered Booths for offices, 9 feet by 9 feet	70	0	100	0
Newspaper offices . . £2, 10s.				

Entries in more than one Class.—In the case of animals entered in more than one class, the entry fee shall be five shillings for each class after the first. This does not apply to the Jumping Competitions.

FINES FOR STOCK NOT FORWARD.

65. In order to lessen the number of vacant Stalls, the following fines shall be imposed on all Exhibitors whose animals are not forward: For Horses, 20s.; Cattle, 20s.; Sheep and Swine, 10s.; Poultry, 3s.;—this fine to be in addition to Entry Money. In the case of death or illness of an animal, a Veterinary Surgeon's Certificate is necessary for a remit of the fine. The absent animals must be reported by the Stewards to the Secretary.

EXTRA STALL FOR ATTENDANTS.

66. Exhibitors of Stock shall be entitled to take an extra Stall for the accommodation of their attendants without being liable to a fine, but they must state when making their Entry that the Stall is to be used for that purpose, and remit rent.

IMPLEMENTS AND OTHER ARTICLES.

67. Implements will be received in the Yard from Tuesday, 29th June, till 5 o'clock on the afternoon of Monday, 5th July. Exhibited Tuesday, Wednesday, Thursday, and Friday. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor, and prices must be stated. *Admission.*

68. No Money Prizes or Medals, except when specially offered, will be given by the Society for Implements of any kind. *Premiums.*

69. Agricultural Implements, and Implements and collections of articles not Agricultural, will be received for Exhibition, but the Secretary is entitled to refuse Entries from dealers in articles not deemed worthy of Exhibition. *Refusing Entries.*

70. In order to encourage exhibits of Agricultural Implements from operative Blacksmiths and Carpenters in the district of the Show, open space will be provided for these in some less prominent part of the Yard at a charge of Entry Money of 1s. per running foot of frontage, 20 feet deep. *Local Operatives.*

71. Implements will be entered in the following sections—viz., 1st, Under Cover, for Agricultural Implements; 2d, Open, for Agricultural Implements; 3d, Exhibits not Implements of Husbandry, either under cover or open, as may be deemed necessary by the Secretary; 4th, Motion Yard; 5th, Open space for Agricultural Implements from operative *Order of Implements.*

Blacksmiths and Carpenters in the district of the Show. Exhibitors must specify the space they require.

Articles not entered.

72. Every article to be exhibited must be entered on the Society's Entry Form. Any article not so entered that is taken to the Show is liable to be ordered out of, or removed from, the Showyard, or confiscated to the Society. Exhibitors infringing this rule are moreover liable to a fine of £1.

Selling by auction and noisy behaviour forbidden.

73. "Cheap-Jacks" are not admitted to the Showyard. The selling of goods by auction, shouting, and other behaviour calculated to annoy visitors or Exhibitors, are strictly forbidden. Exhibitors infringing this Regulation are liable to a fine of £1, and to have themselves and their goods ordered out of, or removed from, the Showyard, or to have their goods confiscated to the Society.

Placing Exhibits.

Removing Exhibits.

74. The articles of each Exhibitor must be all placed in one stand, except Implements in motion, and must not on any account extend beyond the allotted space. No article shall be moved out of its stand, or the stand dismantled, till the termination of the Show, at 5 P.M. on Friday. Those infringing this Rule shall be liable to a fine of 10s.

Arranging Exhibits.

75. Exhibitors must arrange their own articles *within* the space allotted to them before 9 o'clock on Tuesday, and to the satisfaction of the Stewards in charge of the Implement Yard.

Handbills.

76. Exhibitors are not allowed to distribute handbills anywhere in the Yard except at their own Stand; and they must not for this or any other purpose encroach upon the adjacent alleys or open spaces.

Sweeping Stands, &c.

77. Exhibitors are required to have their Stands and the portions of the alleys immediately adjoining them swept up before eight o'clock on each morning of the Show.

Fuel.

78. All Machines requiring steam or fire must be entered as such in the Certificate, and will be placed in the Motion Yard. *Coke only shall be used in all cases where fire is required after* 10 *o'clock* A.M. Those infringing this Rule shall incur a penalty of £5.

Steam Engines.

79. No Steam Engine shall be driven in the Yard at a greater speed than 4 miles an hour. Traction Engines shall not be used in conveying Exhibits or other goods into, from one place to another in, or out of the Showyard.

80. Locomotive and Traction Engines and other Machines must not be moved from their places without permission of the Secretary or Stewards, and must not leave their stands till 6 P.M. on Friday.

Consigning Implements.

81. There must be attached to each Implement, when forwarded to the Show, a label bearing the Exhibitor's name, and that of the Implement, as well as the number of the Exhibitor's stand.

82. The carriage of all Implements must be prepaid.

Exhibitors' and Attendants' Tickets.

83. Each Exhibitor in the Implement Department will receive one free Ticket of Admission to the Showyard for himself or a member of his firm, and will receive, in addition, for the use of attendants employed by him at his Stand, two Tickets of Admission for each complete ten feet of shedding in the Motion Yard, and one Ticket for each complete ten feet of shedding in the other sections. No additional Free Tickets can be issued in any circumstances whatever. Additional Attendants' Tickets, not more than five for any one Exhibitor, may be purchased at 5s. each.

Tickets to be filled up and signed.

84. The Tickets of Admission for Exhibitors and Attendants referred to in the foregoing Regulation will (about fourteen days prior to the Show) be issued to the Exhibitors in blank, with the number of the Exhibitor's Stand. The name of the person for whom each ticket is intended must be written on it before it is used. Each person holding a Free Ticket of Admission must sign his or her name on the back thereof, and must also, when required, sign his or her name in the book at the Entrance Gate.

Tickets not Transferable.

Exhibitors' attendants are strictly cautioned not to lend or transfer their

Tickets which can be used only by the persons whose names they bear, and who must be *bona fide* acting for, or employed by, the Exhibitor. No Ticket is transferable. An Exhibitor is liable to a fine of £1 for each case of transfer or other improper use of a Ticket issued to himself or employee.

Improper use of Tickets.

STALL RENT.

85. Ground to be taken in spaces of 10 feet frontage by 20 feet deep, except in Motion Yard, which is to be 10 feet or any larger amount of frontage by 50 feet deep.

86. The following rates shall be paid by Exhibitors when making their Entries :—

	Members.	Non-Members.
Implement Shedding, 20 feet deep, 7 feet high, per 10 feet	£1 5 0	£1 15 0
Implements without Shedding, 20 feet deep, per 10 feet	1 5 0	1 15 0
Implement space in Motion Yard, without Shedding, 50 feet deep, per foot . .	0 5 0	0 8 0
And with Shedding, 20 feet deep, 10 feet high, per foot	0 7 0	0 10 0
Covered Booths for offices, 9 feet by 9 feet, each	3 10 0	5 0 0
Newspaper offices, each . . £2, 10s.		

ADMISSION OF THE PUBLIC.

The public will be admitted daily at 8 A.M. Judging begins on Tuesday at 10 A.M. The charges for admission to the Yard will be—Tuesday, from 8 A.M. till 5 P.M., 5s.; Wednesday, from 8 A.M. till 5 P.M., 3s.; from 5 P.M. till 8 P.M., 1s.; Thursday, from 8 A.M. till 5 P.M., 2s.; from 5 P.M. till 8 P.M., 1s.; Friday, from 8 A.M. till 5 P.M., 1s.

ADMISSION OF MEMBERS AND EXHIBITORS.

On exhibiting their "*Member's Ticket,*" which is strictly not transferable, Members of the Society are admitted free to the Showyard and to the Enclosures and Stands around the Large Ring, excepting the Reserved Seats in the Grand Stand, and such other parts as may be reserved for any special purpose. Tickets will be sent to all Members residing in the United Kingdom whose addresses are known, and on no account will duplicates be issued. All Members not producing their tickets must pay at the gates, and the admission money will not on any account be returned.

Exhibitors of Stock (not Members) are admitted free to the Showyard on producing their tickets.

For Exhibitors of Implements and their assistants tickets are issued as provided in the Regulations for Implements.

Tickets for attendants on Stock are not available to admit to the Yard between 11 A.M. and 5 P.M.; and any of these attendants requiring to leave the Yard during the day cannot be again admitted except by a special pass (to be applied for at the Ticket Gate), which must be given up on his return.

RESERVED SEATS IN GRAND STAND.

Reserved Seats in the Grand Stand (numbered), are let as follows :—

Wednesday—Forenoon, 2s. ; Afternoon, 3s.
Thursday—Forenoon, 2s. ; Afternoon, 3s.
Friday—Forenoon, 1s. ; Afternoon 2s.

These Seats may be booked at any time prior to the Show on application to the Secretary with remittance for the amount; or in the Showyard at the Treasurer's Office (Committee Room) till within half an hour of the Parades, and thereafter at the Grand Stand. The Directors reserve the right to alter these charges.

VARIOUS.

Placards, except those of the Society, are prohibited both inside the Showyard and on the outside of the Boundary Fence, with the exception of those belonging to Exhibitors, whose right is confined to their own stalls. No newspapers or any other article allowed to be carried about the Yard for sale or display. No strolling bands or musicians admitted.

No Carriages or Equestrians admitted without special leave from the Directors, and then only for Invalids. Bath-chairs may be brought in.

Premium Lists, Regulations, and Certificates of Entry may be obtained by applying at the Secretary's Office, No. 3 George IV. Bridge, Edinburgh.

All Communications should be addressed to James Macdonald, Esq., *Secretary of the Highland and Agricultural Society of Scotland, No.* 3 *George IV. Bridge, Edinburgh.*

Address for Telegrams—" Society," Edinburgh.

LAST DAYS OF ENTRY.

Implements and other Articles—Monday, 3d May.

Stock, Poultry, and Dairy Produce—Monday, 31st May.

No Entry at ordinary fees taken later than those which are received at the Society's Office, Edinburgh, by first post, or 10 o'clock, on Monday morning (31st May). Post Entries for Cattle, Horses, Sheep, and Swine taken on payment of 10s. additional for each entry (Poultry at double fees) till Wednesday morning (2d June), at the Society's Office, Edinburgh, at 10 o'clock.

Covered Booths for Offices—Monday, 31st May.

RAILWAY ARRANGEMENTS.

The Railway Companies will be furnished with a list of the Exhibitors of Stock and Implements, after the 19th June, and all applications for horse-boxes and trucks, and for information as to arrangements of Special Trains, must be made by the Exhibitors themselves with the Station-master where their stock is to be trucked.

The arrangements made by the Railway Companies for the conveyance of Live Stock and Goods to and from the Show are indicated *below, but exhibitors are recommended to apply to the respective companies for* full particulars:—

1. Live Stock and Goods *to* the Show to be charged ordinary rates.

2. Live Stock and Goods *from* the Show *if sold,* to be charged ordinary rates.

3. Live Stock and Goods *from* the Show, *if unsold,* to be conveyed at half rates back to the station whence they were sent, at owners' risk, on production of a certificate from the Exhibitor to the effect that they are unsold; failing production of such certificate, ordinary rates must be charged. The reduction to half rate is to be allowed only when the animals or goods are returned by the same route as that by which they were conveyed *to* the Show. The minimum charge for Stock returned at half rates is one-half the ordinary minimum.

If the unsold Live Stock which was conveyed on the outward journey by Passenger Train in horse-boxes be required to be returned by Goods Train in cattle trucks, half the Goods Train rates must be charged.

If the unsold Live Stock which was conveyed on the outward journey by Goods Train in cattle trucks be required to be returned by Passenger Train in horse-boxes, half the Passenger Train rates must be charged.

4. Unsold Live Stock transferred from one Agricultural Show to another, in another part of the country, must be charged ordinary rates.

5. Unsold goods, previously carried by railway, transferred from one Agricultural Show to another, in another part of the country, will be conveyed at half rates at owners' risk, on production of Certificate from the Exhibitor to the effect that they are unsold; failing production of such certificate, ordinary rates will be charged.

6. Poultry to be charged ordinary rates both ways.

7. Horse-boxes, or other Passenger Train vehicle, will not be provided for the carriage of Live Stock sent by Goods Train and invoiced at Goods Train rates. *For rates for Horse-boxes by Passenger and Special Trains, apply to the Railway Companies.*

8. Provender conveyed to Agricultural Shows with Live Stock will be charged ordinary rates, except so much of the same as may be required on the journey.

9. Men, certified by the owners to be *bona fide* in charge of Live Stock, to be conveyed free in the same train as the animals; one man to each consignment, or one to each vehicle if the consignment occupy more than one vehicle.

10. The ordinary rates do not include delivery *to*, or collection *from*, the Show ground.

11. Agricultural Societies' Show Plant must be charged at Class C rates, station to station.

12. Tents, Canvas, and other articles carried to Shows, not for exhibition, to be charged the ordinary rates both going and returning.

DELIVERY CHARGES.

Rates of Cartage for Delivery or Collection of Live Stock, Implements, and other Articles between the Glasgow Railway Stations and the Showyard.

1. General traffic, 3s. 6d. per ton (minimum per consignment, 1s. 6d.)
2. Implements and Machinery (Agricultural), not exceeding 1 ton each, 4s. per ton (minimum per consignment, 2s.)
3. Implements and Machinery (Agricultural), on their own wheels (specially hauled), not exceeding 1 ton, 4s. each.
4. Single articles, exceeding 1 ton, but not exceeding 3 tons, 4s. 6d. per ton.
5. Single articles, exceeding 3 tons, but not exceeding 5 tons, 6s. 6d. per ton.
6. Single articles, exceeding 5 tons, by special arrangement only, but no less than 9s. per ton.
7. Carriages, four-wheeled, 4s. 6d. each.
8. Carriages, two-wheeled, 3s. 6d. each.
9. Cattle, in floats, 3s. 6d. per head (minimum charge, 5s.)
10. Sheep and Pigs, in floats, 1s. 6d. per head (minimum charge, 5s., and maximum charge, 10s. for each float).

The rates charged for carriage by rail do not in any case include delivery to, or collection from, the Showyard.

The carriage of all Live Stock, Implements, and other articles for exhibition at the Show must be prepaid.

THE PRESIDENT'S CHAMPION MEDALS

A CHAMPION SILVER MEDAL is given by LORD BLYTHSWOOD, President of the Society, for the *best Animal or pen* in each of the following sections:—

1. Shorthorn.
2. Aberdeen-Angus.
3. Galloway.
4. Highland.
5. Ayrshire.
6. Clydesdale Stallions.
7. Draught Geldings.
8. Clydesdale Mares and Fillies.
9. Hunters.
10. Roadsters.
11. Hackneys.
12. Ponies.
13. Shetland Ponies.
14. Blackfaced Sheep.
15. Cheviot.
16. Border Leicester.
17. Shropshire.
18. Half-bred.
19. Oxford Down.
20. Swine.

NOTE.—*Animals entered as Extra Stock may compete for these Medals. Former Winners of the Medals are eligible. The award of these Medals is not subject to the Rules as to calving and foaling. The Society shall have the right to photograph the Winners for publication in the 'Transactions.'*

CATTLE

SHORTHORN.

Class		Premiums. 1st.	2d.	3d.	4th.
	Tweeddale Gold Medal for best Shorthorn Bull—£20.	£	£	£	£
1.	Bull calved before 1st Jan. 1895	15	10	5	3
2.	Bull calved in 1895	15	10	5	3
3.	Bull calved in 1896	12	8	4	2
	Breeder of Best Bull of any age in the three Classes—The Silver Medal.				
4.	Cow of any age	12	8	4	2
5.	Heifer calved in 1895	10	5	3	2
6.	Heifer calved in 1896	10	5	3	2
	[1] Best Female of any age in the three Classes—£20.				
	President's Medal for best Shorthorn.				
	Carry forward				£158

ABERDEEN-ANGUS.

Two Silver Cups, each of the value of £50, for the best Bull of any age and for the best Cow of any age (Heifers excluded) in the Aberdeen-Angus cattle classes. These are to be Challenge Cups, and are to be known as the "Ballindalloch Challenge Cups." They are offered under the following conditions: 1. The Directors shall assume charge of the Cups, and shall frame such rules for their safety as they may decide upon. 2. Each Cup shall be held by the winner for one year as a Challenge Cup, and shall become the property of the exhibitor who shall win it five times, not necessarily in succession. 3. The Society shall, at their own expense, cause to be engraved on each Cup each year, the year, the place of the Show, name of successful exhibitor, name and herd-book number of the animal, and name of its breeder. 4. The Society shall award to the breeder of the successful animals a Silver Medal, bearing that he is the breeder of the winner of the "Ballindalloch Challenge Cup." 5. In every other respect the Cups shall be won according to regulations which the Directors may from time to time enact.

[1] Given by the Shorthorn Society.

[2] Given by the late Mr C. Macpherson Grant of Drumduan.

Brought forward £158

Class	ABERDEEN-ANGUS—*continued.*	Premiums.				
		1st.	2d.	3d.	4th.	
		£	£	£	£	
7.	Bull calved before 1st Dec. 1894	15	10	5	3	
8.	Bull calved on or after 1st Dec. 1894	15	10	5	3	
9.	Bull calved on or after 1st Dec. 1895	12	8	4	2	
	[1] Champion Cup, value £50, for the best Bull of any age in the three Classes (see above).					
	Breeder of best Bull of any age in the three Classes—The Silver Medal.					
10.	Cow of any age	12	8	4	2	
	[1] Champion Cup, value £50, for the best Cow of any age in the above Class.					
11.	Heifer calved on or after 1st Dec. 1894	10	5	3	2	
12.	Heifer calved on or after 1st Dec. 1895	10	5	3	2	
	[2] Champion Gold Medal for best animal of the breed in the foregoing Classes.					158
	President's Medal for best Aberdeen-Angus Animal.					
	GALLOWAY.					
13.	Bull calved before 1st Jan. 1895	15	10	5	3	
14.	Bull calved in 1895	15	10	5	3	
15.	Bull calved in 1896	12	8	4	2	
	Breeder of Best Bull of any age in the three Classes—The Silver Medal.					
16.	Cow of any age	12	8	4	2	
17.	Heifer calved in 1895	10	5	3	2	
18.	Heifer calved in 1896	10	5	3	2	
	President's Medal for best Galloway.					158
	HIGHLAND.					
19.	Bull calved before 1st Jan. 1895	15	10	5	3	
20.	Bull calved in 1895	15	10	5	3	
21.	Bull calved in 1896	12	8	4	2	
	Breeder of best Bull of any age in the three Classes—The Silver Medal.					
22.	Cow of any age	12	8	4	2	
23.	Heifer calved in 1894	10	5	3	2	
24.	Heifer calved in 1895	10	5	3	2	
	President's Medal for best Highland Animal.					158
	EXTRA STOCK.					
25.	[3] Highland Bullock Stirk, calved after 1st Jan. 1896—£8, £6, £4, £2.					

Carry forward £632

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[1] Given by the late Mr C. Macpherson Grant of Drumduan.

[2] Given by the Polled Cattle Society.

[3] Given by Lord Malcolm of Poltalloch and Mr T. V. Smith of Ardtornish.

Class	AYRSHIRE.	Premiums. 1st. £	2d. £	3d. £	
	Brought forward				£632
26.	Bull calved before 1st Jan. 1895 . .	12	8	4	
27.	Bull calved in 1895 . . .	12	8	4	
28.	Bull calved in 1896 . . .	8	5	3	
	[1] Best Ayrshire Bull in the three Classes registered in the Ayrshire Herd-book—Champion Cup, value £50, to be won three times (not necessarily in succession) before becoming the property of the winner.				
	Breeder of Best Bull of any age in the three Classes—The Silver Medal.				
29.	Cow calved before 1894 in Milk . .	10	7	3	
30.	[2] Cow calved in 1894 in Milk . .	10	7	3	
31.	Cow calved before 1894 in Calf . .	10	7	3	
32.	[2] Heifer calved in 1894 in Calf and due to calve within three months of the first day of the Show	10	7	3	
33.	Heifer calved in 1895 . . .	10	5	3	
34.	Heifer calved in 1896 . . .	8	5	3	
	[1] Best Ayrshire Female in the above Classes registered in the Ayrshire Herd-book—Champion Cup, value £50, to be won three times (not necessarily in succession) before becoming the property of the winner.				
				£178	
	Less given by Mr Alex. Cross . . .			20	
	President's Medal for best Ayrshire.				158
					£790

HORSES

FOR AGRICULTURAL PURPOSES.

Clydesdale Challenge Cup, Value 50 Guineas, for Best Mare.

Conditions of Competition.—This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland for the best Clydesdale Mare or Filly registered in the Clydesdale Stud-book, entered in any of the Draught Horse classes or as Extra Stock, former prize-winners being eligible to compete for the Cup. The Cup must be won three times by an exhibitor (but not necessarily in consecutive years or with the same animal) before it becomes his absolute property. The winner of the Cup, other than the absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdale Horse Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. Until the Cup be won outright, the winner of the Cup will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

The Clydesdale Horse Society to have the option of photographing the winner for publication in the Clydesdale Stud-book.

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[1] Given by the Ayrshire Herd Book Society.

[2] First Prizes given by Mr Alex. Cross of Knockdon.

DRAUGHT STALLIONS.

Class		Premiums. 1st. £	2d. £	3d. £	4th. £
35.	Stallion foaled before 1st Jan. 1894	20	15	10	4
36.	Entire Colt foaled in 1894 . .	20	15	10	4
37.	Entire Colt foaled in 1895 . .	20	12	8	4
38.	Entire Colt foaled in 1896 . .	15	10	6	4

[1] Best Stallion in the foregoing Classes—Champion Prize of £10.

Breeder of Best Male Animal of any age in the four Classes—The Silver Medal.

President's Medal for best Clydesdale Stallion.

DRAUGHT GELDINGS.

Class		1st. £	2d. £	3d. £
39.	Draught Gelding foaled before 1st Jan. 1894 . . .	10	5	3
40.	Draught Gelding foaled in 1894 .	6	4	3
41.	Draught Gelding foaled in 1895 .	6	4	3

President's Medal for best Draught Gelding.

DRAUGHT MARES AND FILLIES.

Class		1st. £	2d. £	3d. £	4th. £	
42.	Mare of any age, with Foal at foot .	20	12	7	4	
43.	Yeld Mare foaled before 1st Jan. 1894	12	9	6	4	
44.	Filly foaled in 1894 . .	12	9	6	4	
45.	Filly foaled in 1895 . .	12	9	6	4	
46.	Filly foaled in 1896 . .	12	9	6	4	
	Best Mare or Filly—Challenge Cup, value 50 guineas, as on page 74.					
						388

President's Medal for best Clydesdale Mare or Filly.

ROAD OR FIELD.

Class		1st. £	2d. £	3d. £		
47.	Colt, Gelding, or Filly, foaled in 1896, the produce of thoroughbred Stallions, out of Mares of any breed,—Five Prizes [2]—£10, £7, £5, £2, £1.					
48.	Mare or Gelding for field, foaled in 1894—*in hand* . . .	8	5	3		
					16	
	Carry forward				£16	£388

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[1] Given by Mr James Lockhart, Mains of Airies.

[2] Given by Mr Gilmour of Montrave.

No animal is allowed to compete in more than one Class, except that horses entered in other Classes may also compete in the Jumping and Driving Classes.

Brought forward £16 £388

ROAD OR FIELD—*continued.*

		Premiums.				
Class		1st.	2d.	3d.		
		£	£	£		
49.	Mare or Gelding for field, foaled in 1895—*in hand*	8	5	3		
	[1] Best Hunter Filly in Classes 48 and 49—Gold Medal, value £10, 10s.					
50.	Hunter, Mare or Gelding, foaled before 1st Jan. 1894, able to carry over 14 stone—*in saddle*	20	10	5		
51.	Hunter, Mare or Gelding, foaled before 1st Jan. 1894, able to carry from 12 to 14 stone—*in saddle*	15	8	4		
	President's Medal for best Hunter.					
52.	Roadster, Mare or Gelding, foaled before 1st Jan. 1894, 15 hands and upwards—*in saddle*	10	5	3		
53.	Roadster, Mare or Gelding, foaled before 1st Jan. 1894, 14.2, and under 15 hands—*in saddle*	10	5	3		
	President's Medal for best Roadster.				114	
						130

HACKNEYS.

(*All to be shown in hand.*)

54.	Brood Mare, 15 hands and upwards, with Foal at foot, or to foal this season to a registered Sire	10	6	4	
55.	Brood Mare, under 15 hands, with Foal at foot, or to foal this season to a registered Sire	10	6	4	
56.	Filly, foaled in 1894	8	5	3	
57.	Filly, foaled in 1895	8	5	3	
58.	Filly, foaled in 1896	8	5	3	
59.	Stallion, foaled in or before 1894, over 15 hands	10	6	4	
60.	Stallion, foaled in or before 1894, over 14 and not over 15 hands	10	6	4	
61.	Entire Colt, foaled in 1895, registered in Hackney Stud-book	8	5	3	
62.	Entire Colt, foaled in 1896, eligible for entry in Hackney Stud-book	8	5	3	
	All animals entered in Classes 54, 55, 59, and 60, must be registered in the Hackney Stud-book; all animals entered in Classes 56, 57, and 58, must be got by registered Hackney Sires.				160
		Carry forward			£678

[1] Given by Hunters' Improvement Society.

No animal is allowed to compete in more than one Class, except that horses entered in other Classes may also compete in the Jumping and Driving Classes.

Class	HACKNEYS—*continued.*	Premiums. 1st. £	2d. £	3d. £	Brought forward £678
	[1] Gold Medal value £10 by Hackney Horse Society for best Mare or Filly in Hackney or Pony Classes.				
	President's Medal for best Hackney.				

The Scotch Committee of the Hackney Horse Society gives £36 towards the above Prizes for Hackneys.

PONIES.

Class		1st.	2d.	3d.	
63.	Stallion, over 12, not exceeding 14 hands	5	3	2	
64.	Mare or Gelding, over 13 and not over 14½ hands	5	3	2	
65.	Mare or Gelding, 12 and not over 13 hands	5	3	2	
66.	Stallion, under 12 hands	5	3	2	
67.	Mare or Gelding, under 12 hands	5	3	2	
	President's Medal for best Pony.				50

SHETLAND PONIES.

Class		1st.	2d.	3d.	
68.	Stallion, not exceeding 10½ hands, foaled before 1st Jan. 1894	5	3	2	
69.	Mare, not exceeding 10½ hands, with foal at foot	5	3	2	
70.	Mare or Gelding, not exceeding 10½ hands, foaled before 1st Jan. 1895	5	3	2	
	President's Medal for best Shetland Pony.				30

DRIVING COMPETITIONS.

Class		1st.	2d.	3d.	
71.	Best Turn-out of single Horse, Harness, and Trap, to be driven in the ring, 15 hands and upwards	10	5	3	
72.	Best Turn-out of single Horse, Harness, and Trap, to be driven in the ring, under 15 hands	10	5	3	
					36
73.	Best Tandem Turn-out, to be driven in the ring—First Prize, Gold Medal; Second Prize, Silver Medal.				
					£794

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[1] A Mare 6 years old or more must have had a living foal. Winners of the Hackney Society's Medals in 1897, except at the London and Royal English Shows, excluded. The winner must be entered or accepted for entry in Hackney Stud-book, and certified free from hereditary disease. The Gold Medal being of the intrinsic value of £10, that amount will be paid by the Hackney Horse Society at any time if the Medal be returned in good condition.

No animal is allowed to compete in more than one Class, except that horses entered in other Classes may also compete in the Jumping and Driving Classes.

JUMPING COMPETITIONS—*See page* 80.

No animal is allowed to compete in more than one Class, except that horses entered in other Classes may also compete in the Jumping and Driving Classes.

SHEEP

BLACKFACED.

Class		Premiums.				
		1st.	2d.	3d.	4th.	
		£	£	£	£	
74.	Tup above one shear . .	10	8	6	—	
75.	Shearling Tup	12	8	4	2	
76.	Three Ewes above one shear, with their Lambs at foot . .	10	5	2	—	
77.	Three Shearling Ewes or Gimmers .	10	5	2	—	
	[1] The Queen Victoria Plate, 1897, value £25, for Best Group of Five Blackfaced Sheep, any sex or age, bred by Exhibitor, drawn from one or more of the following classes—viz., 74, 75, 76, 77, and 96. [2] The Queen Victoria Prizes of £2 and £1 to the Shepherds in charge of the First and Second Prize Pens of Blackfaced Sheep in Classes 74, 75, 76, and 77.					£84

President's Medal for best pen of Blackfaced Sheep.

CHEVIOT.

Class		1st.	2d.	3d.	4th.	
78.	Tup above one shear . .	10	8	6	—	
79.	Shearling Tup	12	8	4	2	
80.	Three Ewes above one shear, with their Lambs at foot . .	10	5	2	—	
81.	Three Shearling Ewes or Gimmers .	10	5	2	—	
						84

President's Medal for best pen of Cheviot Sheep.

BORDER LEICESTER.

Class		1st.	2d.	3d.	4th.	
82.	Tup above one shear . .	10	8	6	—	
83.	Shearling Tup	12	8	4	2	
84.	Three Ewes above one shear .	10	5	2	—	
85.	Three Shearling Ewes or Gimmers .	10	5	2	—	
						84

President's Medal for best pen of Border Leicesters.

Carry forward £252

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[1] Given by Breeders of Blackfaced Sheep, per Mr D. T. Martin of Girgenti.
[2] Given by Mr Howatson of Glenbuck.

		Premiums.			
		1st.	2d.	3d.	
Class		£	£	£	
	Brought forward				£252
	SHROPSHIRE.				
86.	Tup above one shear	6	4	2	
87.	Shearling Tup	6	4	2	
88.	Three Ewes above one shear	5	3	2	
89.	Three Shearling Ewes or Gimmers	5	3	2	
	President's Medal for best pen of Shropshires.				44
	HALF-BRED.				
90.	Tup above one shear	6	4	2	
91.	Shearling Tup	6	4	2	
92.	Three Ewes above one shear	5	3	2	
93.	Three Shearling Ewes or Gimmers	5	3	2	
	President's Medal for best pen of Half-Breds.				44
	OXFORD-DOWNS.				
94.	Shearling Tup	6	4	2	
95.	Three Shearling Ewes or Gimmers	5	3	2	
	President's Medal for best pen of Oxford Downs.				22
	EXTRA SECTIONS.				
96.	Three Blackfaced Wethers, one shear	5	3	—	
97.	Three Cheviot Wethers, one shear	5	3	—	
98.	Three Shearling Wethers, any cross out of Blackfaced Ewes	5	3	—	
99.	Five Fat Lambs, any breed or cross	5	3	—	
	[1] The Queen Victoria Prizes of £4, £3, £2, and £1 to the Shepherds in charge of the First, Second, Third, and Fourth Best Pens of Blackfaced Wethers in Class 96. [2] Best Pens of Cross-bred Lambs in Class 99 got by Shropshire Tups, and born on or after 1st February 1897—Three Prizes—£5, £3, £2.				32
	BLACKFACE WOOL.				
100.	[3] Blackface Hogg Wool, one Fleece—£3, £2, £1.				
101.	[3] Blackface Ewe Wool, one Fleece—£3, £2, £1.				
					£394

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[1] Given by Mr Howatson of Glenbuck.

[2] Given by Scotch Breeders of Shropshire Sheep, per Mr David Buttar.

[3] Given by Mr Alex. Willison.

SWINE

Class		Premiums. 1st. £	2d. £	
	LARGE WHITE BREED.			
102.	Boar	5	3	
103.	Sow	5	3	
104.	Three Pigs, not above 8 months old	4	2	
				22
	WHITE BREED OTHER THAN LARGE.			
105.	Boar	5	3	
106.	Sow	5	3	
107.	Three Pigs, not above 8 months old	4	2	
				22
	BERKSHIRE.			
108.	Boar	5	3	
109.	Sow	5	3	
110.	Three Pigs, not above 8 months old	4	2	
	President's Medal for best pen of Swine.			22
				£66

JUMPING COMPETITIONS

SPECIAL REGULATIONS.

(*See also the Regulations on pages* 61 *to* 71.)

1. Jumping Competitions will take place on the afternoons of Wednesday, Thursday, and Friday, the 7th, 8th, and 9th July.
2. *Entries* for each day's Competitions will close at the Secretary's Office in the Showyard at 6 P.M. on the preceding day.
3. *Entry Fees.*—For classes for Horses—Wednesday, £1; Thursday and Friday, 10s. for each class. Pony classes—Wednesday, 10s.; Thursday and Friday, 5s. for each class.
4. *Accommodation* for jumping horses will be provided as follows:—Covered shed in which to stand during the day free of charge; or, on application to the Secretary not less than seven days before the opening of the Show, stalls or loose-boxes will be provided at a charge (in addition to the Entry Fee) of £1 for a stall, and £1, 10s. for a loose-box, which must be paid along with the Entry Fee at the time of application.
5. Horses entered for jumping only need not enter the Showyard till 10 A.M. on the day of Competition, and may leave the Showyard at 6 P.M. each day.
6. *The Jumps* may consist of Single Hurdle, Gate, Double Hurdle, Wall, and Water Jump, power being reserved by the Society to alter these, as well as the Handicaps, as may be thought desirable.

Class	WEDNESDAY.	1st. £	2d. £	3d. £
1.	Horses—open	20	10	5
2.	Ponies, 14.3 hands and under	8	4	2
	Carry forward	28	14	7

Class	1st. £	2d. £	3d. £	
Brought forward	28	14	7	
THURSDAY.				
3. Horses, Open Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1	10	6	3	
4. Ponies, 14.3 hands or under, Handicap, hurdles and gate being raised 4 inches for first prize winner in Class 2	5	3	1	
FRIDAY.				
5. Horses, Open Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 3—4 inches extra for the winner of the two first prizes in Classes 1 and 3	10	6	3	
6. Ponies, 14.3 hands or under, Handicap, hurdles and gate being raised 4 inches for the winner of the first prize in Class 2 or in Class 4, and 8 inches for winner of the first prize in both these Classes	3	2	1	
Champion Prize for most points in Prizes with one or more horses in above Classes	10	0	0	
				£112

EXTRA STOCK

Animals not included in the Classes for Competition may be exhibited as Extra Stock, and may receive Honorary Mention, as follows:—Very highly commended, Highly commended, or Commended.

Animals entered as Extra Stock are eligible to compete for the President's Champion Medals, whether former winners of these Medals or not.

POULTRY

First Premium — ONE SOVEREIGN; *Second Premium* — TEN SHILLINGS; one Commended Ticket—in all the Sections of Poultry.

Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

	Class	Class
DORKING—*Silver Grey*	1. Cock	2. Hen
	3. Cockerel	4. Pullet
DORKING—*Coloured*	5. Cock	6. Hen
	7. Cockerel	8. Pullet
COCHIN-CHINA	9. Cock	10. Hen
	11. Cockerel	12. Pullet
BRAHMAPOOTRA	13. Cock	14. Hen
	15. Cockerel	16. Pullet

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[1] First Prize to count three points; Second Prize, two points; and Third Prize, one point. The money to be evenly divided in the event of a tie.

	Class	Class
SCOTCH GREY . .	17. Cock	18. Hen
	19. Cockerel	20. Pullet
HAMBURG . .	21. Cock	22. Hen
	23. Cockerel	24. Pullet
PLYMOUTH ROCK .	25. Cock	26. Hen
	27. Cockerel	28. Pullet
MINORCA . . .	29. Cock	30. Hen
	31. Cockerel	32. Pullet
LEGHORN . . .	33. Cock	34. Hen
	35. Cockerel	36. Pullet
LANGSHAN . .	37. Cock	38. Hen
	39. Cockerel	40. Pullet
WYANDOTTE . .	41. Cock	42. Hen
	43. Cockerel	44. Pullet
ANY OTHER PURE BREED	45. Cock	46. Hen
	47. Cockerel	48. Pullet
GAME—*Black or Brown Reds*	49. Cock	50. Hen
	51. Cockerel	52. Pullet
GAME—*Any other Pure Breed*	53. Cock	54. Hen
	55. Cockerel	56. Pullet
BANTAMS—*Any Pure Breed*	57. Cock	58. Hen
	59. Cockerel	60. Pullet
DUCKS—*White Aylesbury*	61. Drake	62. Duck
	63. Drake (Young)	64. Duckling
DUCKS—*Rouen* . .	65. Drake	66. Duck
	67. Drake (Young)	68. Duckling
DUCKS—*Any other Pure Breed*	69. Drake	70. Duck
	71. Drake (Young)	72. Duckling
TURKEYS—*Any Pure Breed*	73. Cock	74. Hen
	75. Cock (Poult)	76. Hen (Poult)
GEESE—*Any Pure Breed* .	77. Gander	78. Goose
	79. Gander (Young)	80. Gosling

Amount of Poultry Premiums, £120.

DAIRY PRODUCE

No Exhibitor to show more than one lot in any Class.

	Premiums.		
	1st.	2d.	3d.
Class	£	£	£
1. Cured Butter, not less than 7 lb. .	4	2	1
2. Powdered Butter, not less than 7 lb. .	4	2	1
3. Fresh Butter, three 1-lb. rolls . .	4	2	1
4. Cheddar Cheese, 56 lb. and upwards. Seven Prizes—£12, £9, £7, £5, £4, £2, £1.			

Class

5. Sweet-Milk Cheese, flat shape, white in colour, made according to the Dunlop or other method. Four Prizes—£6, £4, £2, £1.
6. Cheddar Cheese, 14 lb. and under. Three Prizes—£3, £2, £1.

—————— £80

HORSE-SHOEING

(*Prizes given by Sir James H. Gibson-Craig, Bart.*)

Open to Shoeing-Smiths from any part of the United Kingdom.

Class I. DRAUGHT-HORSES.—*Thursday*, at 10 A.M.
Prizes: 1st, £3; 2d, £2; 3d, £1.

Class II. ROADSTERS.—*Friday*, at 10 A.M.
Prizes: 1st, £3; 2d, £2; 3d, £1.

1. Entries must be made with the SECRETARY not later than 31st May. Entry Fee, 5s. for each Competition. Entry Forms may be had on application.

2. Each Competitor will be required to make, take off, and put on one or two shoes, as may be directed by the Judge.

[*Iron of the usual sizes* will be supplied by the Society.]

3. The time occupied by each Competitor will be taken by the attending Member and given to the Judge if he is unable to decide otherwise.

4. The competitor must bring his own tools and nails, and provide his own striker, if he requires one. The Society will provide horses, forge, anvil, iron, and fuel.

5. Any Competitor who does not attend at the Horse-Shoeing Shed and answer to his name at 10 A.M. on the day on which he is entered for competition, will be debarred from competing.

6. The Competitor and his striker will be admitted to the Yard free of charge on the day of Competition on presentation of tickets which will be sent to the Competitor for the purpose.

TRIAL OF MILKING MACHINES

A competitive trial of Machines for Milking Cows will take place in connection with the Show—Premium £50. Entries close on Saturday, 6th February 1897.

Entry Fee, £1 for each machine, payable at the time of entry.

Entry forms to be had from the Secretary.

It is intended that the trial will take place at one or more farms in the south-west of Scotland, on dates to be afterwards fixed by the Society, between the 1st of March 1897 and the opening of the Show.

It is a condition of the trial that a machine to which may be awarded the whole or part of the Premium shall be exhibited in the Glasgow Show of the Society, and worked there by the Exhibitor, under arrangements to be made by the Society; the Society giving free space for this purpose, erecting the structure required, supplying steam-power, and providing cows.

ABSTRACT OF PREMIUMS.

[20 *Champion Medals given by Lord Blythswood.*]

Given by the Society.

1. Cattle	£790	0	0
2. Horses	794	0	0
3. Jumping	112	0	0
4. Sheep	394	0	0
5. Swine	66	0	0
6. Poultry	120	0	0
7. Dairy Produce	80	0	0
8. Medals to Breeders, &c.	12	0	0
9. Machinery Trials	50	0	0
	£2418	0	0
Less—Amount contributed by the Scotch Committee of the Hackney Horse Society, as below	36	0	0
	£2382	0	0

Contributed Prizes.

1. The Shorthorn Society	£20	0	0			
2. The late Mr C. Macpherson Grant of Drumduan,—Cups	100	0	0			
3. Polled Cattle Society	10	0	0			
4. Lord Malcolm	10	0	0			
5. Mr T. V. Smith of Ardtornish	10	0	0			
6. Ayrshire Herd Book Society	100	0	0			
7. Mr Cross of Knockdon	20	0	0			
8. Mr Lockhart, Mains of Airies	10	0	0			
9. Clydesdale Challenge Cup	52	10	0			
10. Mr Gilmour of Montrave	25	0	0			
11. Hunters' Improvement Society	10	10	0			
12. The Scotch Committee of the Hackney Horse Society	36	0	0			
13. Hackney Horse Society	10	0	0			
14. Mr Howatson of Glenbuck	22	0	0			
15. Breeders of Blackfaced Sheep	25	0	0			
16. Scotch Breeders of Shropshire Sheep	10	0	0			
17. Mr Alex. Willison	12	0	0			
18. Tweeddale Gold Medal	20	0	0			
19. Sir James H. Gibson-Craig	12	0	0			
				515	0	0
				£2897	0	0

JAMES MACDONALD, *Secretary.*

3 George IV. Bridge,
Edinburgh, *March* 1897.

The General Show of Stock and Implements for 1898 will be held at Kelso on the 5th, 6th, 7th, and 8th July.

APPENDIX (B)

LIST OF MEMBERS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

ARRANGED ACCORDING TO COUNTIES
AND SHOW DISTRICTS

1897

By the Charter of 1834 the Society consists of two classes, Ordinary and Honorary or Corresponding Members. The number of Honorary or Corresponding Members resident in the United Kingdom must not exceed twenty, but with power to the Society to elect as Honorary Associates persons resident abroad, not subjects of her Majesty, who may have been benefactors to the Society, or who are distinguished for their skill in Art or Science, provided that the number of such Foreign Associates shall not exceed twenty.

By a Bye-law passed in 1873, with reference to the Supplementary Charter of 1856, successful Candidates for the Society's Agricultural Diploma are thereby eligible to be elected free Life Members of the Society.

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January, and June or July. It is not necessary that the proposer should attend the meeting.

The Ordinary Annual Subscription is £1, 3s. 6d., and the Ordinary Subscription for Life-Membership is £12, 12s.; or, after ten annual payments have been made, £7, 7s. Proprietors farming the whole of their own lands, whose Rental on the Valuation Roll does not exceed £500 per annum, and all Tenant Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors Resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, are admitted on a subscription of 10s. annually, which may be redeemed by one payment of £5, 5s., or, after ten annual payments have been made, by one payment of £3, 3s. Subscriptions are payable on election, and afterwards annually in January.

According to the Charter, "Any person elected an Ordinary Member of the Society who shall not have objected to his election, on the same being intimated to him by the Secretary, shall not be entitled to resign or withdraw his name as a Member of the Society, unless he shall have paid up his Life Subscription, or shall have previously settled and paid in Annual Contributions a sum equal to that fixed by the Society at the time of his election, to be paid by Members as the purchase of a Life Subscription in lieu and in redemption of the Annual Payments." The Life Subscription for a Member paying £1, 3s. 6d. is £12, 12s., and for a Member paying 10s., £5, 5s.

Members having Candidates to propose are requested to state whether the Candidate should be on the £1, 3s. 6d. or 10s. list.

Members of the Society receive the 'Transactions' free on application, and are entitled to consult the Chemist and Botanist at reduced rates—to apply for District Premiums—to report Ploughing Matches for the Medal—to free admission to the Showyard, and to exhibit Stock and Implements at reduced rates. Firms are not admitted as Members, but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.

Members having Candidates to propose are requested to send their names to James Macdonald, Esq., 3 George IV. Bridge, Edinburgh.

By a Resolution of the Directors, 2d February 1887, the list of Members, arranged according to Counties, has been so made up that no Member shall vote in more than one Show District for the nomination of Directors. Members finding any mistakes are requested to report the same to James Macdonald, Esq., 3 George IV. Bridge, Edinburgh.

The following is the List of Counties constituting the Show Districts :—

PAGE

1. **Glasgow,** for the Counties of Argyll, Ayr, Bute, Lanark, and Renfrew,—

Argyll 5
Ayr 7
Bute 8
Lanark 8
Renfrew 11

2. **Perth,** for the Counties of Fife, Forfar (Western Division), Kinross, and Perth (Eastern Division),—

Fife 13
Forfar (Western Division) 16
Kinross 17
Perth (Eastern Division) 17

3. **Stirling,** for the Counties of Clackmannan, Dumbarton, Perth (Western Division), and Stirling,—

Clackmannan 21
Dumbarton 21
Perth (Western Division) 22
Stirling 23

4. **Edinburgh,** for the Counties of Edinburgh, Haddington, and Linlithgow,—

Edinburgh 25
Haddington 30
Linlithgow 31

5. **Aberdeen,** for the Counties of Aberdeen, Banff, Forfar (Eastern Division), and Kincardine,—

Aberdeen 32
Banff 36
Forfar (Eastern Division) 37
Kincardine 38

6. **Dumfries,** for the Counties of Dumfries, Kirkcudbright, and Wigtown,—

Dumfries 39
Kirkcudbright 42
Wigtown 44

7. **Inverness,** for the Counties of Caithness, Elgin, Inverness, Nairn, Orkney and Shetland, Ross and Cromarty, and Sutherland,—

Caithness 46
Elgin 46
Inverness 47
Nairn 49
Orkney and Shetland—
  Orkney 49
  Shetland 49
Ross and Cromarty 49
Sutherland 51

8. **Border District,** for the Counties of Berwick, Peebles, Roxburgh, and Selkirk,—

Berwick 52
Peebles 53
Roxburgh 53
Selkirk 55

England 56
Ireland 60
Foreign Countries 60
Members whose Residences are unknown . . . 62
Honorary Members 63
Diploma Holders, Free Life Members . . . 64
Holders of First-Class Certificate in Forestry, Free Life Members 66

LIST OF MEMBERS

ARRANGED ACCORDING TO COUNTIES AND SHOW DISTRICTS.

*The Members marked * have been Presidents, and † Vice-Presidents.*

	Admitted
Her Most Gracious Majesty THE QUEEN.	1872
* His Royal Highness The PRINCE OF WALES.	1873

1.—GLASGOW DISTRICT.

EMBRACING THE

COUNTIES OF ARGYLL, AYR, BUTE, LANARK, AND RENFREW.

ARGYLL.

Admitted
1881 Allan, Alex., of Aros, Tobermory
1875 Allan, Robt., Glenmore, Lochgilphead
1852 Allan, T. W. M., of Glenfeochan, Oban
1889 Anderson, Wm. D., Ardsheal, Ballachulish
1889 Andrew, David, Knockstaple, Campbeltown
1844*†ARGYLL, The Duke of, K.G., Inveraray Castle, Inveraray
1863 Berry, Walter, Glenstriven, Toward
1882 Black, Donald, junior, Clachan, Lochfynehead, Inveraray
1891 Blair, John Simpson, Melfort, Kilmelfort
1884 Boyd, Wm., Killundine, Oban
1881 Buchanan, Dr Alexander, Tiree, Tobermory
1881 Buchanan, Angus, Druimnatoran, Strontian
1853 Buchanan, Dun., Auchinbreck, Colintraive
1890 Buchanan, John, Glenlean, Sandbank
1893 Buik, Herbert, Keil House, Ballachulish
1889 Cameron, Allan Gordon, of Barcaldine Castle, Taynuilt
1837 Campbell, Alex., of Achendarroch, Lochgilphead
1891 Campbell, Alexander E., Duiletter, Dalmally
1865 Campbell, Lt.-Col., of South Hall, Colintraive
1889 Campbell, Alex. James Henry, of Dunstaffnage, Oban
1894 Campbell, Colin George Pelham, Stonefield, Tarbert
1875 Campbell, Capt. D., of Inverneil and Ross, Ardrishaig
1882 Campbell, Edward P., Captain, 42d Highlanders, South Hall, Colintraive

Admitted
1885 Campbell, Lt.-Col. H. Burnley, of Ballimore, Tigh-na-bruaich
1888 Campbell, James, of Jura, Greenock
1888 Campbell, James, Shanvallie, Ledaig
1877 Campbell, James, Succoth Villa, Lochgilphead
1874 Campbell, John, of Kilberry, Tarbert
1877 Campbell, John, Glenforsa, Aros, Mull
1894 Campbell, John, Ardifuir, Kilmartin, Lochgilphead
1890 Campbell, Robt. C. Graham, of Shirvan, Lochead Lodge, Ardrishaig
1877 Clark, Andrew, Islay
1869 Clark, Archd., Bencorrum, Dunoon
1853 Clark, Archibald, Inverchapple, Kilmun
1893 Clark, Francis Wm., of Ulva, Aros, N.B.
1867 Clark, Lachlan, Tangy, Campbeltown
1889 Clark, Robert, Skerbolin, Campbeltown
1894 Colvill, Robert, Glensaddell, Campbeltown
1885 Corson, Thomas, Auction Mart, Oban
1882 Craig, Hugh, Ardoran, Oban
1884 Crerar, Peter C., Brackley, Dalmally
1889 Cunningham, Robert, Kilkivan, Campbeltown
1867 Dickie, Robt., Killeonan, Campbeltown
1878 Duncan, Alex., Duart, Auchnacraig, Mull
1881 Duncan, R., Royal Hotel, Tigh-na-bruaich
1884 Elliot, Walter, Ardtornish, Oban
1893 Ferguson, Archd., Lochaline, Morven
1885 Finlay, C. Campbell, of Castle Toward, Greenock
1870 Finlay, Kirkman, of Dunlossit, Islay
1870 Fletcher, B. J. C., Dunans, Colintraive
1897 Fletcher, John A., Laudale, Ardgour
1874 Forsyth, James N. M., of Quinish, Tobermory
1884 Fraser, Duncan, Hotel, Dalmally

Admitted	
1895	Fraser, Hugh, Factor, Largie Estate Office, Tayinloan, Argyllshire
1867	Gardyne, Col. C. G., of Glenforsa, Mull
1889	Gemmell, John, Dalrioch, Campbeltown
1875	Gillespie, John, Temperance Hotel, Oban
1891	Gillies, John, Barnacarry, Kilninver, Oban
1891	Graham, Archd. W., Erray, Tobermory
1889	Graham, Robt. C., of Skipness, Whitehouse
1888	Graham, William, of North Erines, Tarbert (6 Royal Crescent, Glasgow)
1872	Grant, A., Cuil House, Inveraray
1891	Greenbank, Jonathan C., Gigha, Greenock
1894	Greig, James, Chiskan, Campbeltown
1873	Hall, Allan, Degnish, Ardmaddy, Easdale, Oban
1875	Hall, Jas. M., Killean House, Tayinloan
1888	Hamilton, George, Crear, Tarbert, Lochfyne
1865	Hay, C., Ardbeg, Islay
1896	Hay, Colin E., Mungostell, Drimnin
1853	Hosack, William, Oban
1889	Hunter, James, Machribeg, Campbeltown
1857	Hunter, Wm., Lilybank, Campbeltown
1894	Inglis, George Erskine, Machrahanish Estate Office, Campbeltown
1889	Kinloch, Charles, Ballymeanach, Portsonachan
1850	Lamont, James, of Knockdow, Greenock
1875	Lloyd, T., of Minard Castle, Inveraray
1869†	**LORNE**, The Marquis of, K.T.
1883	Lothian, James, Campbeltown
1896	MacArthur, Alex., Banker, Oban
1862	Macarthur, John, Banker, Inveraray
1861	M'Callum, John, Fairfield, Kirn
1879	M'Coll, Duncan, Clachan House, Lismore, Oban
1881	Macdiarmid, H., Island House, Tiree, Oban
1882	Macdiarmid, Robert, Castles, Lochawe
1874	Macdonald, Alex., Gurtnamore Villa, St Andrew Street, Dunoon
1893	Macdonald, J. Ronald M., Largie Castle, Tayinloan
1889	Macdougall, Allan, Maam, Inveraray
1893	M'Dougall, Duncan C., Ashens, Tarbert, Lochfyne
1892	M'Dougall, Major S., of Lunga, Daill House, Lochgilphead
1873	Macfarlane, Lewis, Invermay, Lochgoilhead
1863	M'Gibbon, David, Ardnacraig, Campbeltown
1870	MacGregor, Donald, of Ardgartan, Glencroe (Royal Hotel, Edinburgh)
1883	MacGregor, Donald, Solicitor, Oban
1893	M'Intyre, John Alexander, Bunawe Farm, Taynuilt, Oban
1877	Mackay, A. F., of Carskey (26 George Square, Edinburgh)
1892	M'Kechnie, Dugald, of Tenga, Oban (60 Northumberland Street, Edinburgh)
1869	MacKechnie, Jas., Blarcreen House, Taynuilt
1878	Mackellar, Peter, Crossaig, Tarbert
1872	Mackenzie, John, of Knipoch, Oban
1891	Mackenzie, J. H. Munro, of Mornish, Tobermory
1874	M'Lachlan, D., Lochgilphead
1886	Maclachlan, Jn., of Maclachlan, Inveraray (12 Abercromby Place, Edinburgh)
1870	Maclaine, M. G., of Lochbuie, Oban
1888	M'Laren, Dun., Banker, Tarbert, Lochfyne
1875	M'Latchie, W., Ballygreggan, Campbeltown
1875	M'Lean, A. J., of Pennycross, Oban
1849	Macleod, John N., of Kintarbert, Glensaddell, Campbeltown
1896	M'Millan, Dr D., Tarbert, Argyllshire
1894	M'Nair, Archibald, Moy, Campbeltown
1848	Macneal, H., of Ugadale, Campbeltown
1860	**M'NEILL**, Maj.-Gen. Sir J. C., of Colonsay, V.C., K.C.M.G., K.C.B.
1876	M'Nicol, John, Achandarroch, Ballachulish
1882	M'Phail, John, Auchnacraig Farm, Mull
1891	Macpherson, Colin D., Corpach, Fort William
1883	Macpherson, James, Benbuy, Inveraray
1891	M'Vean, Colin A., Kilfinichen, Pennyghael, Mull
1896	Malcolm, Lord, of Poltalloch, Lochgilphead
1874	Masson, John, Tobermory
1881	Maxwell, Wm., Baraskomel, Campbeltown
1891	Meikle, R. A., Ri-Cruin, Lochgilphead
1894	Melles, Joseph, Gruline Aros, Isle of Mull
1861	Mercer, John, Ardnadam, Sandbank
1889	Mitchell, Archibald, Clockiel, Campbeltown
1889	Mitchell, James B., Aros, Campbeltown
1895	Morris, Major C. H., Killundine, Drimnin, Argyllshire
1855	Morrison, Charles, of Islay, Bridgend
1897	Mundell, Hugh, Tarbert, Lochfyne
1877	Munro, D. H. C., of Kenlochlaich, Appin
1888	Munro, John, Ironmonger, Oban
1888	Nicolson, Neil, Auchgoyle, Tigh-na-bruaich
1887	Orde, Colin Campbell, Kilmory, Lochgilphead
1858	**ORDE**, Sir John W. P. Campbell, of Kilmory, Bart., Lochgilphead
1889	Ralston, Gav., Kilmichael, Campbeltown
1896	Ramsay, Iain, Kildalton, Port Ellen, Islay
1882	Reid, Peter, Port Ellen, Islay—*Free Life Member*
1892	Robertson, Alexander, Chemist, Oban
1891	Routledge, Joseph, Annat, Fort William
1893	Scarlett, W. J. Yorke, Gigha
1891	Shairp, Alex., Land Agent and Architect, Oban
1884	Shankland, Wm., Killicheran, Lismore
1884	Smith, T. V., of Ardtornish, Oban
1881	Smith, W. Anderson, Ledaig
1879	Stewart, Rev. A. M., Inverchaolain, Greenock
1894	Stewart, Archibald, Darlochan, Campbeltown
1863	Stewart, Com. D., R.N., Knockrioch, Campbeltown
1881	Stewart, John Lorne, of Coll, Oban
1871	Stewart, Capt. J. C., of Fasnacloich, Craig Villa, Oban
1858	Stewart, Robt., of Kinlochmoidart, Salen (4 Moray Place, Edinburgh)
1892	Stuart, Mrs E., Dalness, Glenetive, Taynuilt
1880	Sutherland, John D., Oban
1895	Tarratt, J. Fox, Ellary, by Ardrishaig
1893	Thom, Allan Gilmour, Canna
1891	Thomson, Duncan, Inveryne, Tigh-na-bruaich
1859	Thorburn, David, St Mary's, Tobermory
1870	Tod, James, Rashfield, Kilmun
1875	Turner, A., Kilchamaig, Whitehouse, Kintyre
1853	Turner, D., Corachaive, Sandbank
1893	Veitch, John, jun., Brackley House, Ardrishaig
1876	Whyte, D. C., Crossaig, Kintyre
1868	Wyllie, James, Factor, Inveraray
1887	Young, William, Drum, Campbeltown

AYR.

Admitted
1882†Ailsa, The Marquis of, Culzean Castle, Maybole
1867 Allan, Andrew, North Kirkland, Dalry, Ayr
1895 Allan, James, Blackstone, Dalry, Ayr
1882 Alston, George, Loudoun Hill, Darvel
1897 Angus, Robt., Lugar, Ayrshire
1897 Baird, J. G. A., M.P., Adamton, Monkton
1895 Bisset, Joseph, 34 Union Buildings, Ayr —*Free Life Member*
1893 Bone, David, Auchencloich, Sorn, Galston
1882 Bone, William, Shalloch Park, Girvan
1893 Borland, John Kennedy, North Balloch, Girvan—*Free Life Member*
1865 Boyd, Col. J. Hay, of Townend, Symington, Kilmarnock
1890 Brisbane, C. T., of Brisbane, Largs
1866 Brown, David, Banker, Maybole
1870 Bruges, Edward C., Dalgig, New Cumnock
1889 Caldwell, John, Kilnford, Dundonald
1894 Campbell, James Archibald, of Craigie, Ayr
1887 Campbell, W. K. H., of Nether Place, Mauchline
1876 Christie, James M., Lauristina, South Beach Road, Ardrossan
1895 Clark, James, of Nunland Common, Auchinleck
1857 Clark, William, Shawhill, Monkton
1891 Clark, W. K., Currah Farm, Girvan
1877 Cochrane, James, Minnieveay, Dalmellington
1882 Cochrane, Hon. Thomas, Largs
1895 Craig, John, Royal Bank House, New Cumnock
1865 Crawford, J., Milnstonford, W. Kilbride
1896 Crawford, Jn., jun., Manraehead, Beith
1897 Crawford, Thomas, Dowhill, Girvan
1880 Cuninghame, Sir W. M., of Corsehill, Bart., Glenmore House, Maybole
1859 Cunningham, W. C. S., of Caprington, Kilmarnock
1857 Deans, J. Y., of Kirkstyle, Kilmarnock
1889 Dempster, Jas. R., yr. of Ladyton, Galston
1890 Drummond, Hugh, Craighead, Mauchline
1893 Duke, Guy, Braehead Office, Kilmarnock
1887 Dunlop, And. T. L., Lyonston, Maybole —*Free Life Member*
1869 Dunlop, Gabriel, Castle Farm, Stewarton
1896 Dunlop, James, Midland, Fenwick
1875 Dunlop, Quintin, Morriston, Maybole
1889 Dunlop, Wm. Hamilton, of Doonside, Ayr
1889 Fergusson, John Blackburn, Doonholm, Ayr
1854 Fergusson, Right Hon. Sir James, of Kilkerran, Bart., M.P., Maybole
1875 Foulds, A. R., of Clerkland, Stewarton
1891 Fraser, M. P., Rankingston, Patna
1885 Gemmell, Andrew, Lugton Ridge, Beith
1875 Gemmel, G. C., Upper Whitehaugh, Muirkirk
1896 Giersberg, Albert Geo., Portland Estates Office, Kilmarnock
1875 Gilmour, Alex., Annfield House, Irvine
1875 Gilmour, James, Orcharton, Cumnock
1881 Glasgow, The Earl of, Kelburn, Fairlie
1894 Gray, William, Grougar Bank, Galston
1884 Guthrie, Wm., Troon
1890 Hamilton, Claude, Carbieston, Ayr
1853 Hamilton, Hugh, of Pinmore, Ayr
1865 Hamilton, J., Wallace Bank, Kilmarnock
1889 Hamilton, Lieut.-Col. John, of Sundrum, Ayr

Admitted
1887 Hamilton, John W., of Cairnhill, Kilmarnock
1889 Hannah, John M., Girvan Mains, Girvan
1897 Hart, Andrew D., Blackcraig, New Cumnock
1878 Hay, J. F. Dalrymple, Dunlop House, Dunlop
1874 Henderson, Richard, Portland Estates Office, Kilmarnock—*Free Life Member*
1889 Herron, Thos., Trees, Maybole
1895 Hood, James, Dormiston, Coylton
1865 Houldsworth, Henry, Carrick House, Ayr
1857 Houldsworth, J. H., Rozelle, Ayr
1865 Houldsworth, J. M., Ayr
1857 Houldsworth, Wm., Rozelle, Ayr
1876 Howatson, W. M. S., Carskeoch, Patna
1865†Howatson, Chas., of Glenbuck, Glenbuck
1896 Howatson, Chas. Nile, yr. of Glenbuck, Glenbuck, N.B.
1857 Howie, John, Hurlford, Kilmarnock
1894 Howie, M. G., Law Farm, Dreghorn
1889 Howie, Thomas, Monkton, Ayr
1867 Hunter, David, 3 Barns Terrace, Ayr
1894 Hunter, Hugh, Mossbog, Tarbolton
1895 Hunter, Matthew, Adamhill, Craigie, Kilmarnock
1878 Hunter, Thomas, Implt. Maker, Maybole
1895 Inglis, Chas. D., Stair House, Tarbolton
1877 Inglis, Robert, Loveston House, Girvan
1885 Johnstone, James, Alloway Cottage, Ayr
1895 Kennedy, Roland F., of Finnarts, Glenapp, Ballantrae
1870 Kennedy, William, Claremont, Ayr
1874 Kennedy, Wm., 2 Queen's Terrace, Ayr
1869 Kerr, James, Barrhill, Kilbirnie
1896 Kilpatrick, James, Craigie Mains, Kilmarnock
1889 King, Robert A., Ayr
1897 Knox, James, Place, Kilbirnie
1873 Latta, William, Darmalloch, Cumnock
1895 Lees, Robert, Lagg, Ayr
1865 Lindsay, John, Semple House, Stewarton
1895 Lindsay, Thomas C., Aitkenbrae, Monkton, Ayrshire
1889 Littlejohn, James, Genoch, Ayr
1874 M'Connell, Wm., of Knockdolian, Girvan
1894 Macfarlane, Donald J., Cronberry, Old Cumnock
1879 M'Farlane, Richard, County Club, Ayr
1887 M'Jannet, Archibald C., Irvine
1886 M'Min, Thomas M'C., Craigievar, West Kilbride
1877 Marshall, John, Implt. Maker, Maybole
1875 Martin, Donald T., of Girgenti, Irvine
1896 Meikle, John, Auchincruive Estate Office, Mounthamilton, Ayr
1886 Middlemas, Wm., Solicitor, Kilmarnock
1897 Millar, William, Nile Court, Ayr
1893 Mitchell, James, Middlefield, Muirkirk
1882 Montgomerie, Rob., Lessnessock, Ochiltree
1889 Montgomery, John, Meadowhead, West Kilbride
1893 Morton, Alexander, Gowanbank, Darvel
1892 Morton, William, Highbowhill, Newmilns
1897 Murray, John, jun., Carston, New Cumnock
1897 Neilson, Walter, Ewenfield, Ayr
1884 Niven, Richard, Airlie, Ayr
1870 Oswald, Rich. A., of Auchincruive, Ayr
1897 Page, Andrew D., Culzean Home Farm, Maybole
1897 Paterson, Wm. A. Orr, of Gadgirth, 21 Wellington Square, Ayr
1888 Paton, Hugh (W. Samson & Co.), Kilmarnock
1881 Pollock, A., Mauchline

Admitted
1889 Pollock, R. M., Middleton, Ayr
1895 Reid, David H., Attiquin, Maybole
1894 Robertson, Andrew, Holmes Farm, Kilmarnock
1857 Rodger, Hugh, Hillhead, Kilmarnock
1882 Scott, C. W., Everlie, Skelmorlie
1890 Scott, John, C.B., of Hawkhill, Largs
1875 Scott, Robert Sinclair, Burnside Largs
1872 Shaw, Chas. G., Ayr
1893 Shaw, D. W., 17 Wellington Square, Ayr
1893 Shaw, Philip A., Blair, Maybole
1888 Skeoch, P. M'Kinnon, Boydstone, Beith
1870 Sloan, John, Alton Albany, Barr, Girvan
1889 Smith, Robert, Sheilds, St Quivox, Ayr
1880 Smith, Thomas, The Castle, Maybole
1895 Smith, William, Gateside, Beith
1882 Somervell, James, of Sorn, Mauchline
1879 Speir, Robert, Rosebank, Largs
1885 Steel, Alex., Burnhead, Newmilns
1895 Steven, John, Purroch, Hurlford, Kilmarnock
1885 Stevenson, Allan, Architect, Ayr
1888 Stevenson, David, Silverwood, Kilmarnock
1885 Stevenson, David, Crossburn, Troon
1888 Stevenson, John, Balig, Ballantrae
1858 Stewart, James, Heathfield, Irvine
1882 Stuart, A., Muirhouse, Symington, Kilmarnock
1894 Tannahill, Robert D., National Bank Buildings, Kilmarnock
1876 Taylor, H., Kamishill, Hurlford, Kilmarnock
1882 Thornycroft, J. B., Netherplace, Mauchline
1886 Tivendale, William, Burn House, Galston
1891 Todd, Hugh, Harperland, Dundonald
1884 Turner, J. H., Portland Estates Kilmarnock
1867 VERNON, Hon. G. R., Auchans House, Kilmarnock
1887 Wallace, H. R., Cloncaird Castle, Maybole
1875 Wallace, Robert, Auchenbrain, Mauch line
1895 Wallace, Wm., Cattle Dealer, Mauchline
1874 Wardrop, Robert, Garlaff, Cumnock
1897 Watson, John, Union Bank House, Beith
1868 Weir, W., of Kildonan, Shewalton, Dreghorn
1889 Whyte, Robert, East Raws, Kilmarnock
1882 Willison, Alex., Easterhill, Dalry
1873 Willison, George, Braeside, Dalry
1893 Wilson, Robert, Auchincloigh, Ochiltree
1882 Wright, R. P., Downan, Ballantrae—*Free Life Member*
1884 Wyllie, Alex., Holmbyre, Ardrossan
1868 Young, John, jun., Ayr

BUTE.

1870 Allan, James, jun., Balnacoole, Shiskine, Arran
1889 Anderson, Francis, Bute Estate Office, Rothesay
1869†BUTE, The Marquis of, K.T., Mount Stuart, Rothesay
1889 Dickie, Wm. P., Cranslagvourty, Rothesay
1889 Duncan, Chas., Little Kilmory, Rothesay
1875 Duncan, Jas., Bannatyne Mains, Rothesay
1892 Duncan, James L., Birgedale, Knock, Rothesay—*Free Life Member*
1889 Gilmour, Thomas, Kilchattan Tile Works, Rothesay
1889 M'Alister, Robert, Mid Ascog, Rothesay
1889 MacAlister, James, Meikle Kilmory, Rothesay

Admitted
1861 Macdonald, P., The Douglas Hotel, Brodick
1889 Macfie, Hugh, Ballycaul, Rothesay
1889 Macfie, John, Lubas, Rothesay
1875 M'Intyre, Daniel, Dunalunt, Rothesay
1881 M'Intyre, Wm., Mount Stuart, Rothesay
1878 Mackay, Archibald M., Bruchag, Rothesay
1876 M'Pherson, Don., Queen's Hotel, Rothesay
1878 Murray, Patrick, Strabane, Brodick
1881 Stuart, J. Windsor, Rothesay
1864 Tod, William, Glenree, Lamlash
1892 Walker, James L., Bank of Scotland, Lamlash
1887 Wallace, John, Glenkill, Lamlash

LANARK.

1875 Addie, John, Viewpark, Uddingston
1893 Aikman, C. M., M.A., B.Sc., 128 Wellington Street, Glasgow
1882 Aikman, Thomson, 5 Princes Square, Glasgow
1875 Alexander, Jas., 145 North Street, Glasgow
1864 Allan, Alex., Waddiefield, Hamilton
1892 Allan, Henry, Carstairs House, Carstairs
1877 Allan, James, Kirklands, Dolphinton
1878 Anderson, Robert, Arden Cottage, Caldercruix, Airdrie
1870 Andrew, W. J., Banker, Coatbridge
1872 ANSTRUTHER, Sir W. C. J. C., of Carmichael, Bart., Thankerton
1875 BAIN, Sir J., 3 Park Terrace, Glasgow
1864 Bain, James, Bank of Scotland, Glasgow
1887 Bain, W. P. C., Lochrin Iron Works, Coatbridge
1878 Baird, Archibald, 67 Robertson Street,
1880 Baird, John, c/o W. Taylor, 168 West George Street, Glasgow
1886 Barr, Duncan C., Factor, Hamilton
1862 Barr, James, jun., Whiteshaw, Carluke
1882 Beckitt, C. R., Rockvilla Oil Mills, Port Dundas
1877 Beith, Gilbert, 7 Royal Bank Place, Glasgow
1882 Bertram, A. D., Kersewell, Carnwath
1852 Bertram, Wm., of Kersewell, Carnwath
1882 Bertram, Wm., yr. of Kersewell, Carnwath
1896 Black, William, of Stanrigg, Airdrie
1893 Boyle, Adam H., Rushhill House, Maryhill
1881 Brock, H., V.S., 112 North Street, Glasgow
1878 Brown, James, of Orchard, Carluke
1891 Brown, John Hillhead, Airdrie —*Free Life Member*
1882 Brown, John, Shields, East Kilbride
1896 Brown, Robert, Craighead, Bothwell
1877 Brownlie, R., Bogside, Newmains, Carluke
1875 Brownlie, T., 1 Carlton Terrace, Kelvinside, Glasgow
1849 Buchanan, Colonel Sir David Carrick, K.C.B., of Drumpellier, Coatbridge
1876 Buchanan, Capt. J. R. G., of Scotstone, Eastfield House, Cambuslang
1865 Burns, James C., Glenlee, Hamilton
1884 Cadzow, Robt., Borland, Walston, Biggar
1851 Calder, W., c/o Mrs Brown, 8 Colebrooke Street, Glasgow
1892 Campbell, J. R., Technical College, Glasgow—*Free Life Member*
1858 Campbell, William, Solicitor, Hamilton
1877 Cathcart, J. P., 135 Buchanan Street, Glasgow

Admitted
1882 Chapman, Wm., Meadowhead, Airdrie
1857 Christie, T. C., of Bedley, Chryston
1889 Clark, Alexander, Todlaw, Lesmahagow
1881 Clark, W. A., Crutherland, East Kilbride
1869 Clarke, John, Hamilton
1879 Clarkson, Alexander, Cormiston, Biggar
1888 Clement, And., Cheese Merchant, Glasgow
1875 Clerkson, Alexander, Cleghorn, Lanark
1890 COLEBROOKE, Sir Edward, of Crawford, Bart., Abington
1871 Comrie, Alex., 12 Colebrooke Street, Hillhead, Glasgow
1876 Coubrough, Wm., Sornfallow, Wiston, Biggar
1864 Cousland, Jas., 82 Hope Street, Glasgow
1873 Cowan, James, 23 St Vincent Place, Glasgow
1888 Craig, John, High Ploughland, Strathaven
1882 Craig, John, of Bellsfield, Blantyre
1885 Craig, John, South Halls, Strathaven
1884 Cranston, Stuart, 28 Buchanan Street, Glasgow
1882 Crawford, Alexander, Netherton, Carmunnock
1864 Cunningham, John M., 154 St Vincent Street, Glasgow
1895 Dallas, James, Employers' Liability and Accident Insurance Company, 39 Hope Street, Glasgow
1860 Dalziel, George, Goldielea, Uddingston
1894 Davidson, Alex., Gateside, Douglas
1870 Davidson, Hugh, of Braedale, Lanark
1894 Davidson, Wm., Gateside, Douglas
1881 Dawson, John M., 56 George Square, Glasgow
1886 Denholm, Alex., Springfield, Biggar
1895 Dennistoun, A. H. O., of Golfhill, Glasgow
1889 Douglas, Rev. Sholto Douglas Campbell, of Douglas Support, Coatbridge
1891 Dunlop, Colin, jun., Hutton Bank, Hamilton
1889 Dunn, Richard, Udston, Hamilton
1869 Dykes, J., jun., 92 St Vincent Street, Glasgow
1887 Dykes, Thomas, Bent, Lesmahagow
1887 Elliot, William, Auction Mart, Lanark
1884 Findlay, John, Springhill, Baillieston
1888 Findlay, John, Warrenhill, Thankerton
1897 Findlay, John W., Estates Office, Bank Street, Airdrie
1855 Findlay, Rob., of Springcroft, Baillieston
1861 Fleming, Alex., Raith, Bothwell
1867 Fleming, David, Avonmill, Hamilton
1888 Fleming, David, Castleton, Rutherglen
1882 Fleming, James, Muirside, Carmunnock
1877 Fleming, John, Strathaven
1870 Fleming, J., Meadowbank Cot., Strathaven
1876 Fleming, J. B., of Beaconfield, Glasgow
1882 Fleming, Wm., Windlaw, Carmunnock
1895 Fleming, William, Calla, Carnwath
1863 Forrest, Peter, of Hairmyres, Shotts
1888 Fowler, John, 4 Kelvinbank Ter., Sandyford, Glasgow
1877 French, James, Netherton, Abington
1867 Frew, Thos., 6 Windsor Terrace, Glasgow
1897 Fulton, James, 1 Regent Park Square, Strathbungo, Glasgow
1872 Galbraith, W. W., Croftfoot, Gartcosh
1888 Garroway, Wm., 694 Duke St., Glasgow
1878 Gibb, John, Tarbrax, Carnwath
1897 Gibson, Richard, Kirkton St., Carluke
1891 Gilchrist, John, Orbiston Mains, Bellshill, Glasgow
1877 Gillies, Wm., Shawlands House, Glasgow
1888 Gilmour, Allan, of Eaglesham, Glasgow
1882 Gilmour, Arthur, Crosshill, East Kilbride

Admitted
1894 Glen, William, 32 Berkeley Terrace, Glasgow
1877 Goff, Dr Bruce, The Lindens, Bothwell
1887 Goodwin, John, Clydeview, Motherwell
1893 Gordon, Henry Erskine, Aikenhead House, Cathcart
1838 Gordon, John, of Aikenhead, Cathcart
1883 Gow, Andrew, factor, Wishaw
1882 Graham, Thomas, 52 St Enoch Square, Glasgow
1873 Grahame, Jas., Western Club, Glasgow
1887 Grant, Henry O. Ogilvie, of Grant, 53 Miller Street, Glasgow
1876 Gray, John, 181 Renfrew Street, Glasgow
1867 Greenshields, J., West Town, Lesmahagow
1884 Haddow, Robt., Cold Chapel, Abington
1895 Hamilton, C. G. Henderson, of Dalserf, Netherburn
1875 Hamilton, Gavin, of Auldtown, Lesmahagow
1889 Hamilton, Gavin, jun., B. L. Co. Bank, Lesmahagow
1896 Hamilton, George L., 25 Robertson St., Glasgow
1897 Hamilton, James, 56 Wilson St., Glasgow
1897 Hamilton, James, New Mains House, New Mains
1869 Hamilton, Jas., Woolfords, Cobbinshaw
1881 Hamilton, James A., 7 Shaftesbury Terrace, W. Regent Street, Glasgow
1857 HAMILTON of Dalzell, Lord, Dalzell, Motherwell
1893 Hamilton, Robert, High Motherwell, Motherwell
1877 Hamilton, Thomas, Poniel, Douglas
1889 Hardie, David, Sub-Factor, Dalzell, Motherwell
1852 Harvie, Rev. W. of Brownlee, Carluke
1862 Hendrie, John, 74 Bath Street, Glasgow
1897 Hill, Thomas, 66 Robertson St., Glasgow
1868 Houldsworth, Jas., of Coltness, Wishaw
1872 Houldsworth, W. J., Coltness House, Wishaw
1897 Hozier, James H. C., M.P., Mauldslie Castle, Carluke (22 Berkeley Square, London, W.)
1862 HOZIER, Sir W. W., of Newlands and Mauldslie Castle, Bart., Carluke
1869 Hunter, William, Craighead, Abington
1896 Imrie, Peter, Blackhill, Maryhill, Glasgow
1878 Inch, John, Howburn, Walston, Biggar
1870 Inch, Thomas, Gilkerscleuch, Abington
1855 Jack, Robt., Banker, Motherwell
1857 Jeffray, John, Cardowan House, Millerston
1893 Johnston, George, Mosesfield, Springburn, Glasgow
1876 Johnston, James, Pather Farm, Wishaw
1878 Johnston, Jas., Lochburnie, Maryhill
1893 Kennedy, M. H., Contractor, Partick, Glasgow
1888 Kerr, James, Marchmont, Lanark
1857 Kerr, Robert, 307 St Vincent Street, Glasgow
1869 King, Robert, Levernholm, Hurlet
1891 Laidlaw, John, 98 Dundas Street, S.S., Glasgow
1882 Lamberton, Andrew, Sunnyside Works, Coatbridge
1884 LAMINGTON, Lord, Lamington House
1864 Latta, M. R., Carmyle, Tollcross, Glasgow
1895 Lawrie, James, West Newton, Strathaven, Lanarkshire
1896 Lawrie, John M'Nab, 18 Watson Street, Glasgow
1897 Lawson, John, 175 West George Street, Glasgow

Admitted
1893 Leiper, Robert, Yardbent, Strathaven
1872 LOCKHART, Sir S. M., of Lee and Carnwath, Bart., Lanark
1884 Lockhart, Major-General Graeme, of Castlehill, C.B., Cambusnethan House, Wishaw
1870 Lockhart, Wm. Elliott of Cleghorn, Lanark
1857 Logan, Andrew, 1 Hampden Terrace, Mount Florida, Glasgow
1896 Loudon, Thomas, Muirhouse, Cleland
1874 Love, Jas., 12 St James Street, Paisley Road, Glasgow
1885 M'Alpine, A. N., Glasgow and West of Scotland Technical College, 60 John Street, Glasgow—*Botanist to the Society*
1868 M'Call, Prof. J., Veterinary College, Glasgow
1846 M'Call, Henry, of Daldowie, Glasgow
1888 Macdonald, Dr, 40 Lilybank Gardens, Hillhead, Glasgow
1860 Macfarlane, Donald, Balmuildy, Bishopbriggs
1884 M'Farlane, John, 151 North St., Glasgow
1872 M'Ilwraith, Jas., 92 Regent St., Glasgow
1864 Mackie, J. L., Ravelston, Great Western Road, Glasgow
1896 Mackie, Peter Jeffrey, Auchlochan, Lesmahagow
1896 M'Kinlay, Robert, Hillhouse, Sandilands, Lanark
1894 M'Kirdy, W. A. Scott, of Birkwood, Lesmahagow
1876 Maclae, A. Crum, of Cathkin, 149 St Vincent Street, Glasgow
1871 M'Laren, Jas., 182 Hope Street, Glasgow
1883 MacLellan, Robert, Conservative Club, Glasgow
1888 M'Lennan, Bailie James, 40 St Andrew Street, Glasgow
1882 M'Neilage, A., 93 Hope Street, Glasgow
1896 M'Neill, John, 1 Great Western Terrace, Glasgow
1875 M'Pherson, D., 95 Finlay Drive, Dennistoun, Glasgow
1884 M'Queen, Hope, Midlock, Abington
1884 M'William, Andrew, 38 Queen Street, Glasgow
1879 Main, R. R. (A. & J. Main & Co.), Possil Park, Glasgow
1889 Marshall, James, Airbles, Motherwell
1895 Marshall, Robert C., Caldergrove, Newton, Glasgow
1858 Martin, John, 50 West Scotland Street, Glasgow
1870 Merricks, William, 166 Buchanan St., Glasgow
1884 Millar, John, 16 St Vincent Place, Glasgow
1892 Millar, John, Fern Hill, Cathkin, Rutherglen
1868 Miller, G. J., of Frankfield, Shettleston
1885 Mitchell, James, Auchengray House, Airdrie
1894 Mitchell, John, 18 Shaftesbury Street, Glasgow
1888 Mitchell, Robt., M.R.C.V.S., 18 Shaftesbury Street, Glasgow
1894 Mitchell, Robert, jun., 18 Shaftesbury Street, Glasgow
1889 Mitchell, William, Hazleside, Douglas
1861 Moffat, George, 128 Gartland Drive, Dennistoun
1893 Moore, Wardrop, yr. of Greenhall, Blantyre
1875 Morton, J., Nether Abington, Abington
1859 Mosman, H., of Auchtyfardle, Lesmahagow
1874 Muirhead, William, Winton Place, Uddingston

Admitted
1875 Murdoch, Alex., Gartcraig, Shettleston
1888 Murdoch, James, jun., Gartcraig, Shettleston
1893 Murdoch, James C., West Hallside, Newton, Glasgow
1874 Murdoch, J. F., East Hallside, Newton
1875 Murdoch, John, Carntyne, Shettleston
1857 Murdoch, Robert, Hallside, Newton
1893 Murdoch, William, 3 Eglinton Lane, Glasgow
1894 Murray, James, Low Ploughland, Darvel
1862 Murray, John L., of Heavyside, Biggar
1884 Murray, John, Parkhall, Douglas
1874 Murray, Robert G., of Spittal, Biggar
1879 Murray, W. G. G., 93 Hope Street, Glasgow
1875 Napier, John S., of Lethame, Strathaven
1893 Neilson, James, of Mossend, Carfin Hall, Holytown
1867 Neilson, William, Bank of Scotland, Bellshill
1887 Nimmo, Thomas, Lawhead, Forth
1877 Paterson, G. R., Drumalbin, Thankerton
1884 Paterson, James, jun., Over Abington, Abington
1862 Paterson, John, Nether Howcleugh, Moffat
1887 Paterson, John, of Torfoot, Strathaven
1848 Paterson, Robert, of Birthwood, Biggar
1896 Paterson, William, Glentaggart, Douglas
1884 Paterson, Wm., Grange, Thankerton
1885 Paton, James, Glencaple, Abington
1896 Paton, Thomas (Perth Auction Mart), 4 Whitehill St., Dennistoun, Glasgow
1878 Payne, James, 62 Cromwell St., Glasgow
1854 Pearson, Andrew A., of Springfield, Carluke
1869 Pender, J., Springhill, Stane, Shotts
1873 Pitblado, C. B., 72 Albert Road, Crosshill, Glasgow
1889 Pollock, James, V.S., Hamilton
1884 Pollock, W., Yoker Mains, Glasgow
1884 Pringle, John, Castle Mains, Douglas
1892 Ralston, Chas. W., Garscube, Maryhill
1890 Ramsay, Professor G. G., University, Glasgow
1882 Rattray, Patrick, C.A., 45 West Nile Street, Glasgow
1893 Reid, C., Photographer, Wishaw
1867 Reid, F. R., of Gallowflat, Rutherglen
1879 Reid, F. R., jun., Gallowflat, Rutherglen
1885 Reid, William, 140 St Vincent Street, Glasgow
1882 Renwick, Robert, Buchley, Bishopbriggs
1874 Richardson, George, Western Club, Glasgow
1867 Ritchie, John, Whitecastle, Biggar
1882 Robb, Geo., 11 Germiston Street, Glasgow
1896 Robertson, And. R., 2 Lorne Terrace, Maryhill—*Free Life Member*
1856 Robertson, John, 274 Bath St., Glasgow
1882 Rodger, Hugh, Estates Office, Airdrie
1884 Ross, John M., 2 Devonshire Gardens, Glasgow
1894 Russell, Alexander, 175 West George Street, Glasgow
1867 Russell, Archibald, Auchenraith, Bothwell
1877 Russell, George, Carnwath
1875 Russell, James, National Bank, Airdrie
1882 Russell, James, Allanton, Hamilton
1871 Salmond, David S., 40 St Enoch Square, Glasgow
1875 Sanderson, James, West Yard Houses, Carnwath
1878 Scott, Jas., Distiller, Garrion Tower, Wishaw
1868 Scott, J., Springfield House, Uddingston
1885 Scott, John, jun., Auchinloch, Lenzie

Admitted
1897 Scott, William, Gilfoot, Carluke
1875 Scott, William, Priestfield, Blantyre
1882 Shirlaw, James, Carfin, Motherwell
1889 Shirlaw, John, Howgate, Carluke
1896 Sime, John, 162 Buchanan St., Glasgow
1877 Skead, George, Royal Bank, Wishaw
1894 Sleigh, C. W., Estate Office, Blackwood, Lesmahagow
1889 Smellie, James, Coursington, Motherwell
1856 Smith, Andrew, Milnwood, Lanark
1862 Smith, George, 5 Langside Terrace, Shawlands, Glasgow
1857 Smith, H., 9 Kelvinside Terrace (North), Glasgow
1886 Speir, John, Newton Farm, Newton, Glasgow
1875 Spencer, A., 160 Hope Street, Glasgow
1888 Sprot, Major A., of Garnkirk, Chryston, Glasgow
1883 Stalker, Donald, Mossend Farm, Mossend, Glasgow
1861 Stark, W., Point House, Cattle Wharf, Glasgow
1891 Steel, Matthew Taylor, 135 Buchanan Street, Glasgow
1891 Stein, A. H., of Kirkfield, Lanark
1889 Steven, Hugh, Milton Iron Works, Glasgow
1869 Stewart, D. W., Cartland, Lanark
1854 Stewart, John, Cattle Market, Glasgow
1879 Stewart, John, Mossvale House, Chryston, Glasgow
1881 Stewart, R. K., of Murdostoun, Newmains
1855 Stodart, David, Banker, Lanark
1889 Stuart, Col. Harington, of Torrance, East Kilbride
1892 Swan, James G., 74 Bath Street, Glasgow
1881 Tennant, James, 7 Hillend Gardens, Hyndland Road, Glasgow
1897 Tervit, John, Wistown, Thankerton
1881 Tervit, John, Roseland, Covington, Thankerton
1889 Thomson, A. J., of Huntfield, Biggar
1869 Thomson, John, 41 Mitchell Street, Glasgow
1882 Thomson, Seton (Rose, Murison, & Thomson), St Vincent Place, Glasgow
1892 Thomson, Seton M., Golfhill, Glasgow
1884 Thomson, William, Violet Bank, Dumbreck, Ibrox
1875 Thomson, W. G., 41 Mitchell Street, Glasgow
1896 Turnbull, Wm., Daldowie, Broomhouse, Glasgow
1882 Ure, John, 66 Washington Street, Glasgow
1882 Vere, J. C. Hope, of Blackwood, Lesmahagow
1882 Walker, William, 84 Braeside Street, Glasgow, W.
1882 Wallace, Hugh, 30 Havelock Street, Glasgow
1893 Wallace, Jas., Graham Square, Glasgow
1888 Wallace, John, 273 Argyle Street, Glasgow
1882 Wallace, John, The Ingle, Rutherglen
1898 Wallace, Robert, Graham Square, Glasgow
1879 Wallace, W. (John Wallace & Sons), Graham Square, Glasgow
1897 Wallace, Wm., 281 Gallowgate, Glasgow
1896 Watkins, G. S., 186 West George Street, Glasgow
1882 Watson, Adam, Oggs Castle, Newbigging, Lanark
1888 Watson, G. M., Baitlaws, Lamington
1883 Watson, John, 205 West George Street, Glasgow

Admitted
1857 Watson, Sir John, of Earnock, Bart., Hamilton
1884 Watson, Robert, Culterallers, Biggar
1880 Watt, John, Drumgray, Airdrie
1875 Watt, Robert, Solicitor, Airdrie
1877 Weir, James, Sandilands, Lanark
1894 White, David, 182 Hope Street, Glasgow
1884 Williamson, Alex., Chesterhall, Wiston, Biggar
1896 Willison, John, Parisholm, Douglas
1883 Wilson, Andrew, Dalzell, Motherwell
1888 Wilson, James, Westburn, Cambuslang
1877 Wingate, Andrew, Castlehill, Wishaw
1889 Wood, Alex., 8 & 10 Stockwell Street, Glasgow
1877 Wragg, Charles, 4 Stockwell Street, Glasgow
1873 Young, Wm., Waterbank, Carmunnock

RENFREW.

1887 Alexander, P. D., Dunmyat, Bridge of Weir
1884 Allan, David, M.R.C.V.S., Clarkston, Busby
1895 Ballantyne, William, Busbyside, Busby
1880 Bartlemore, William, Paisley
1886 Blair, James, Bankfoot, Inverkip
1843†BLANTYRE, Lord, Erskine, Glasgow
1857*BLYTHSWOOD, Lord, Blythswood, Renfrew
1892 Bowie, William, Blackbyres, Barrhead
1884 Bryce, David, Abbots Inch, Paisley
1865 BURNS, Sir John, of Castle Wemyss, Bart., Wemyss Bay
1893 Campbell, J. M., Writer, Auldfield Place, Pollokshaws
1884 Clark, James, Burnside, Mearns
1884 Clark, William, Netherlea Farm, Cathcart
1893 Coats, Andrew, Ferguslie, Paisley
1888 COATS, Sir Thos. Glen, Bart., of Ferguslie Park, Paisley
1850 Colquhoun, J., Corkerhill, Pollokshaws
1884 Crawford, John W., Greenock
1878 Cross, Alexander, jun., Eastbank, Langbank
1881 Cross, David, Ingliston, Bishopton
1880 Cuninghame, J. C., of Craigends, Johnstone
1894 Dawson, Robert, Donchilly Farm, Pollokshaws
1882 Ferguson, A. R., Writer, Neilston
1893 Ferguson, James A., Elderslie Estates Office, Deanside, Renfrew
1875 Ferguson, Peter, Rock Cottage, Renfrew
1883 Fleming, William, Fulwood, Houston
1897 Fulton, Thomas, Shiels, Renfrew
1868 Gairdner, Charles Brown, Newton-Mearns
1857 Gilmour, Matt., Town of Inchinnan, Paisley
1857 Glegg, J., Factor, Milliken House, Johnstone
1875 Houstoun, Geo. L., of Johnstone, Johnstone
1894 Houston, William F., V.S., Paisley
1879 Howie, William, Finnochbog, Inverkip
1894 Hunter, Andrew, Braehead House, Cathcart
1857 Hunter, James, Braehead House, Cathcart
1884 Jackson, Jas., Carolside, Busby
1875 Jamieson, Wm., Tighnamara, Wemyss Bay
1897 Kidston, George J., Finlaystone Langbank, Renfrew
1895 Lambie, James, Bonnington Moor, Eaglesham

Admitted
1882 Locke, Matthew, Arthurlie, Barrhead
1875 Love, Alexander, Margaret's Mill, Kilmalcolm
1875 Macdowall, H., of Garthland, Lochwinnoch
1896 M'Intosh, Alexander, Greenhill, Houston
1884 M'Kie, H. B., Freeland, Erskine
1896 M'Meeken, James, Carnbooth, Busby
1885 Mactavish, D. A., Solicitor, Johnstone
1873 Mather, Wm., Kirkhill, Newton Mearns
1894 Mather, William, Netherplace, Mearns
1889 MAXWELL, Sir John Maxwell Stirling, of Pollok, Bart., M.P., Pollokshaws
1864 Myles, James, Deanside, Renfrew
1881 Park, Walter, Hatton, Bishopton, Renfrew
1853 Paterson, Jas., 32 Eldon Street, Greenock
1867 Peile, H. R. B., Mansion House, Greenock
1873 Pollok, John, Paper Mill, Langside
1883 Pottie, Alexander, V.S., Paisley
1875 Ramsay, John, Butcher, Kilbarchan
1888 Reid, Colin, Castle Farm, Mearns
1882 Reid, Robert, Writer, Lochwinnoch
1888 Reid, William, Titwood Farm, Mearns

Admitted
1896 Renshaw, Charles Bine, M.P., of Barrochan, Houston
1863 Richardson, David, of Hartfield, Greenock
1893 Richmond, Andrew, M.B., C.M., 9 St James' Place, Paisley
1863 Riddell, David, Blackhall, Paisley
1880 Scott, A., 24 Mearns Street, Greenock
1882 Scott, James B., Ryeraes, Linwood
1894 Scott, William, Denniston, Kilmalcolm
1891 Speirs, Alex. Archibald, of Elderslie, Houston House, Johnstone
1895 Steven, Wm., Low Borland, Eaglesham
1848†STEWART, Sir M. R. Shaw, of Greenock and Blackhall, Bart., Ardgowan, Inverkip
1880 Taylor, William, Park Mains, Renfrew
1894 Thomson, Malcolm B., Park House, Renfrew
1888 Wallace, John, Broadlee, Neilston
1883 Wilson, John, Erskine, Bishopton
1863 Wilson, Robert, Manswrae, Bridge of Weir
1883 Young, R. C., Netherfield, Paisley

2.—PERTH DISTRICT.

EMBRACING THE

COUNTIES OF FIFE, FORFAR (WESTERN DIVISION), KINROSS, AND PERTH (EASTERN DIVISION).

FIFE.

Admitted
1883 Aitken, George Lewis, Boglilly, Kirkcaldy
1893 Allan, Jas., Denbrae Farm, St Andrews
1888 Allan, James, Dysart
1875 Anderson, Charles, Fettykil, Leslie
1877 Anderson, David, Cassendilly, Cupar-Fife
1883 Anderson, David A., Woodside House, Ladybank
1867 Anderson, W. H., Anchor Lodge, Anstruther
1892 ANSTRUTHER, Sir R., of Balcaskie, Bart., Pittenweem
1862 Arnot, David, Friarton, Newport, Fife
1886 Arnot, Thomas, Newton of Falkland, Falkland
1894 Auchmuty, George, Bowhouse of Wemyss, West Wemyss
1884 Auchterlonie, James, Dothan, Kirkcaldy
1844 Aytoun, R. S., of Inchdairnie, Kirkcaldy
1873 Baird, William, of Elie, Fife
1884 Balfour, Edward, of Balbirnie, Markinch
1857 Balfour, Major F. W., of Fernie Castle, Collessie
1890 Balfour, Francis, yr. of Fernie, Fernie Castle, Collessie
1893 Balfour, Thomas C., Carberry, Leven
1893 Balfour, William, jun., Ovenstone, Pittenweem
1871 Ballingal, Neil, Sweetbank, Markinch
1861 Ballingall, John, Dunbog, Newburgh
1890 Banks, James, Pitteddie, Kirkcaldy
1896 Barclay, Joseph D., V.S., Dunfermline
1886 Baxter, Edward Gorrel, of Teasses, Largo
1891 Baxter, John Henry, of Gilston, Largo
1893 Bayne, James, Muirhead, Freuchie
1856 Bell, David, Todhall, Cupar-Fife
1893 Bell, George, Lundin Mill, Largo
1879 Bell, Dr James M., Kettle
1880 Bell, John, Stenton, St Monance
1890 Bell, Thomas, Todhall, Cupar-Fife
1877 Bennet, Arthur, South Pitkinnie, Lochgelly
1896 Berry, Wm., of Tayport, Newport, Fife
1893 Berwick, Andrew, Hayston, Leuchars
1861 Berwick, David, Ardross, Elie
1848 Bethune, Alexander, Elie
1833 Bethune, Colonel R., of Nydie, St Andrews
1862 Beveridge, George, Kirkcaldy
1869 Beveridge, Jas., Crombie, Dunfermline
1872 Beveridge, William, of Bonnyton, Dunfermline
1881 Beveridge, William, jun., Eastgrange, Dunfermline
1896 Birrell, James, Banbeath, Leven
1883 Black, James, Tullybreck, Markinch
1890 Black, John, Nether Pratis, Leven

Admitted
1889 Blyth, James, jun., Logie, Cupar-Fife
1890 Blyth, William, Easter Kincaple, St Andrews
1879 Bonthrone, A., Newton of Falkland, Falkland
1895 Bonthrone, James, Farmer, Hayfield, Kirkcaldy
1893 Borrowman, James, V.S., Cupar-Fife
1887 Bowman, George M., of Logie, Cupar-Fife
1859 Bowman, James, Newark, St Monance
1890 Braid, John, Abercrombie, St Monance
1893 Brewster, John, Newhall, Crail
1891 Brown, Andrew, Rossie, Collessie
1894 Brown, Hugh, Colton Mains, Dunfermline
1876 Brown, John, of Colton, Dunfermline
1842 Bruce, John, W.S., 8 Pilmuir Links, St Andrews
1889 Buttercase, Andrew, Uthrogle, Cupar-Fife
1894 Butters, Hugh, Masterton, Dunfermline
1894 Carmichael, M. T., Knockhill, Newport, Fife
1880 Carnegie, James, of Aytoun Hill, Newburgh
1869 Carswell, David, Blacketyside, Leven
1885 Carswell, J. H., Straiton, Leuchars
1868 Cartwright, T. R. B. Leslie Melville, Melville House, Ladybank
1886 Cathcart, James T., yr. of Pitcairlie, Newburgh
1857 Cathcart, R., of Pitcairlie, Newburgh
1883 Cheape, Captain G. C., of Wellfield, Strathmiglo
1889 Cheape, Mrs, of Wellfield, Strathmiglo
1881 Cheape, J., of Lathockar, St Andrews
1879 Christie, F. W., Dairsie Mains, Cupar-Fife
1890 Christie, James M., Scotscraig, Tayport
1874 Christie, John, Kirktonbarns, Tayport
1889 Clark, Alex., Chestnuts, Lundin Links
1871 Clark, Wm., 57 Cross Gate, Cupar-Fife
1894 Clement, Jas., Balkaithly, St Andrews
1894 Clement, John, Clatto, St Andrews
1890 Constable, John, M.D., Leuchars
1893 Cook, David, Luthrie, Cupar-Fife
1892 Corstorphine, J. E. E., Inchyre Abbey, Newburgh, Fife
1897 Crabbie, Captain J. (Scots Greys), Wemyss Hall, Cupar-Fife
1878 Craig, John, Craigencalf, Kinghorn
1866 Crawford, R., Crooks House, Inverkeithing
1894 Crichton, Jas., Boyne House, Ladybank
1879 Cunningham, David, Dalachy, Aberdour, Fife
1879 Cunningham, John, Burntisland
1883 Cunningham, T. D., Dronly, Cupar

Admitted
1880 Curr, James, Knockhill, Newport, Fife
1894 Currie, Walter T., of Trynlaw, Rankeillor, Cupar-Fife
1881 Curror, Peter, Maltster, Kirkcaldy
1880 Davidson, George P., Kirkbank, Burntisland
1896 Davidson, James Scott, of Cairnie, Colinsburgh
1896 Davidson, Thos., Branxton and Cowdenlaws, Dysart
1887 Deans, John, Fernbank House, Auchtermuchty
1894 Dickie, Alfred, Devon, Kennoway
1894 Dott, Robt., Muir Farm, Pathhead, Kirkcaldy
1873 Drummond, J., jun., Blacklaw, Dunfermline
1869 Dryburgh, J., Kininmonth, Cupar-Fife
1861 Drysdale, Wm., of Kilrie, Kinghorn
1884 Dun, George, Easter Kincaple, St Andrews
1888 Duncan, Miss C. H. A. Morison, of Naughton, Dundee
1883 Duncan, John, of Kirkmay, Crail
1871 Duncan, John, Easter Balrymouth, St Andrews
1855 Duncan, Robert, of Kirkmay, Crail
1893 Duncan, Robert, Craigfoodie, Cupar-Fife
1885 Duncan, Thomas L., Pusk, Leuchars
1897 Edie, Harry Hay, Cornceres, Kilrenny
1881 Elder, Hugh, Dunfermline
1875†ELGIN and KINCARDINE, the Earl of, Broomhall, Dunfermline
1860 ERSKINE, Sir Thomas, of Cambo, Bart., Kingsbarns
1893 Erskine, Colonel W., yr. of Cambo, Kingsbarns
1892 Fair, Alex., Pratis Farm, Leven
1891 Fairlie, J. O. R., of Myres Castle, Auchtermuchty
1890 Farmer, A. Douglas, Kinkell, St Andrews
1884 Farmer, Robert, of Kingask, St Andrews
1882 Ferguson, R. C. Munro, of Raith, M.P., Kirkcaldy
1884 Fergusson, David, of Foxton, Cupar-Fife
1891 Ferrie, David, Parbroath, Cupar-Fife
1892 Finlay, Archibald, Markinch
1859 Finlay, John, Lochend, Lochgelly
1893 Finlayson, James, Beley, Stravithie
1893 Fleming, Andrew, Hallteases, Ceres
1861 Flockhart, J., Banker, Colinsburgh
1873 Forgan, James, Sunnybraes, Largo
1894 Fraser, Robt., Middle Balbeggie, Kirkcaldy
1861 Fyfe, Robert, Wester Nether Urquhart, Gateside, Fife
1879 Fyshe, Jas., jun., Treaton, Markinch
1888 Galloway, John, of Seggie, Guardbridge
1871 Gibb, David, Rennyhill, Anstruther
1893 Gibb, James, Easthall, Cupar-Fife
1877 Gibson, James, Whitehouse, Kirkland, Methil
1877 Gilchrist, Andrew, Carvenom, Anstruther
1871 Gillespie, Alex., Balmeadowside, Cupar-Fife
1841 Gillespie, D., of Mountquhannie, Cupar-Fife
1872†Gilmour, John, of Montrave, Leven
1890 Gilroy, George A., Rankeillour, Springfield, Fife
1887 Goodall, Thos., Cardenburns, Cardenden
1896 Gordon, Rev. Æneas G., The Manse, Kettle
1894 Gordon, T. P., Prize Poultry Farm, Thornton
1888 Gourlay, J. Murray, 1 Hope St., St Andrews
1887 Grace, Stuart, St Andrews

Admitted
1892 Greig, Robert Blyth, Balcurvie, Windygates—*Free Life Member*
1896 Grosset, J. E., Solicitor, Cupar-Fife
1869 Haig, H. V., of Ramornie, Ladybank
1871 Heggie, R. B., West End House, Kirkcaldy
1891 Henderson, A. L., Kingsdale, Kennoway
1884 Hepburn, James, Forth Bank, Kinghorn
1877 Hepburn, John, Kinghorn
1876 Herdman, B. A., Falkland Wood, Falkland
1872 Hill, David, Upper Magus, St Andrews
1881 Hill, John, Langside, Kennoway
1893 Horn, David, Drumcarro, Cupar-Fife
1884 Husband, D., Struthers, Cupar-Fife
1891 Husband, Robt., Solicitor, Dunfermline
1893 Husband, Thos. R., Gellet, Dunfermline
1883 Hutchison, Alex., Ingleside, Kirkcaldy
1891 Hutton, John, Kilminning, Crail
1891 Inglis, James, Redhouse, Cardenden, R.S.O.
1887 Inglis, John, of Colluthie, Cupar-Fife
1887 Inglis, R. T., Blinkbonny Lodge, Newburgh
1869 Irvine, Walter Douglas, of Grangemuir, Pittenweem
1895 Irving, John, Estate Office, Knockhill, Newport, Fife
1896 Jamieson, W., Estate Office, Elie
1876 Jamieson, W. T., Solicitor, Anstruther
1890 Johnston, John, New Inn, St Andrews
1877 Johnston, L., Sands, Kincardine-on-Forth
1882 Johnston, S. W., Fincraigs, Gauldry, Dundee
1890 Kay, Alex., Flass, Newport
1863 Kay, William, Inch Farm, Kincardine-on-Forth
1893 Kelloch, George, Balmerino, Newport
1865 Kidd, A. F., High St., West Aberdour
1859 Kininmonth, Peter, Collairnie, Newburgh, Fife
1884 Kinnear, John Boyd, of Kinloch, Collessie
1871 Kinross, Thomas, Wester Balbeggie, Kirkcaldy
1879 Knight, Robert, jun., V.S., Dunfermline
1893 Kydd, John, Rhynd, Leuchars
1878 Landale, James, The Binn, Burntisland
1893 Lauder, Thos., St Nicholas, St Andrews
1896 Law, George P., Wester Pitscottie, Ceres
1896 Law, James, Spencerfield, Inverkeithing
1891 Lawson, Alex., of Burnturk, Annfield, Kettle
1890 Lawson, Henry Graham, Firthfield, Anstruther
1863 Lee, John, East Coates, Largo
1884 Lees, David, Pitscottie, Cupar
1862 LESLIE, Hon. G. Waldegrave, Leslie House, Leslie
1896 Lesslie, William, Banchory, Kirkcaldy
1889 Lochead, Matthew, Wester Balgarvie, Cupar-Fife
1896 Longmuir, Thomas, of Denork, St Andrews
1895 Lumsden, John Lawson, Freuchie
1854 Macdonald, Alex., of Edenwood, Cupar-Fife
1869 M‘Farlane, James, Writer, Dunfermline
1890 M‘Gibbon, John, Bankhead, Leven
1890 M‘Gregor, Donald, Broomhall Estate Office, Charlestown
1890 M‘Gregor, James Fleming, 71 Market Street, St Andrews
1878 M‘Intosh, Dr, University, St Andrews
1871 M‘Naughton, William, North Lethans, Saline
1896 Maitland, F. L., of Lindores, Newburgh, Fife

Admitted
1871 Maitland, Henry, of Balmungo, St Andrews
1879 Marshall, Walter, of Lochmaloney, Cupar
1879 Martin, James, of Priestfield, Pitlessie, Ladybank
1896 Meiklejohn, Wm., Glen-Newton Brewery, Falkland
1893 Meiklem, James, Begg, Kirkcaldy
1893 Meiklem, William, Begg, Kirkcaldy
1880 Meldrum, D. B., of Kincaple, St Andrews
1859 Meldrum, J., of Eden Bank, Pittormie Cupar-Fife
1893 Melville, Thomas Robertson, Kettle
1875 Menzies, Fergus, Blackhall, Dunfermline
1897 Millar, George, Nydie Mains, St Andrews
1877 Millar, J., of Waulkmill, Dunfermline
1890 Miller, James Gilbert, Starr, Cupar-Fife
1870 Millie, George, St Mary's, Cupar-Fife
1893 Milne, John, Annfield, Cardenden
1894 Mitchell, Alexander, of Luscar, Dunfermline
1861 Mitchell, John, Fliskmiln, Newburgh
1859 Mitchell, Robert, 3 Bonnygate, Cupar-Fife
1893 Morgan, John, Nocknary, Auchtermuchty
1878 Morrison, B. G. W., of Falfield, Cupar-Fife
1890 Morton, David, Craighead, Crail
1894 Morton, John, Givan, Wormiston, Crail
1894 Moubray, Capt. H. H. Carew, of Otterston, Aberdour
1879 Muckersie, Henry, Drumfin, Dunfermline
1890 Mudie, T. E., Greenside, Largo
1893 Muir, Alex., of Ballinkirk, Markinch
1875 Muirhead, T., Townhill Store, Dunfermline
1883 Nairn, M. B., of Rankeillour, Springfield
1896 Nasmyth, Alex. Hogg, Middlebank, Dunfermline
1896 Ness, Walter, Potato Merchant, Freuchie
1896 Nicholson, William D., Ardross, Elie
1884 Nisbet, T. M., Forthar, Kettle
1896 Normand, David, Dalginch, Markinch
1880 Normand, William J., Dysart
1873 Oliphant, T. T., Queen Mary's, St Andrews
1892 Orchison, Alex., of Torr, Cupar-Fife
1882 Osborne, David, Banker, Cupar-Fife
1896 Ostlere, Edward, Ivy Lodge, Dysart
1896 Oswald, John, of Dunnikier, Kirkcaldy
1886 Page, Walter, Bogleys, Kirkcaldy
1859 Paton, John, Kirkness, Lochgelly
1893 Porter, James, Prinlaws House, Leslie
1864 Prentice, G., of Strathore, Thornton
1889 Purvis, Major A. B., R.A., Kinaldy, Stravithy, R.S.O.
1844 Purvis, John, of Kinaldy, Stravithy, R.S.O.
1895 Ramsay, John, Inch, Pittenweem
1896 Readdie, Ebenezer Robert, Letham, Leven
1864 Reekie, A., Walton, Auchtertool, Kirkcaldy
1886 Reid, Andrew, V.S., Auchtermuchty
1882 Reid, John, of Dunduff, Dunfermline
1893 Reid, Robert, Arthurseat, Kingskettle
1878 Rigg, James Home, of Tarvit, Cupar-Fife
1898 Rintoul, W., Mains of Blebo, Cupar-Fife
1893 Rintoul, Wm., Mains of Blebo, Cupar
1873 Roberts, J., Greenhead of Arnot, Leslie
1860 Robertson, Dr Charles, 16 Craigholm, Burntisland
1859 Robertson, J., Denbrae, Cupar-Fife
1893 Roger, William, Kingsbarns
1891 Ross, Nicol, Cattle-salesman, Dunfermline

Admitted
1892 Rosslyn, The Earl of, Dysart House, Kirkcaldy
1859 Russell, David, Silverburn, Leven
1895 Russell, George, Cadham, Markinch
1869 Russell, James, of Kinsleith, Cupar-Fife
1893 Scott, Douglas, Newton of Wemyss, Fifeshire
1896 Scott, George, Byresloan, Markinch
1893 Scott, John, Newton of Wemyss, Fifeshire
1894 Shepherd, William, Solicitor, Leven
1883 Sheppard, Thomas, Moonzie, Cupar
1879 Sime, Alex., Dumbarnie, Largo
1897 Small, John, Westhall, Cupar-Fife
1857 Small, L., of Foodie, Cupar
1886 Smith, Andrew, Hilltarvit, Cupar-Fife
1882 Smith, James T., Duloch, Inverkeithing
1886 Smith, Thomas, Inverdovat, Newport
1878 Smith, William, Mount, Cupar-Fife
1870 Stark, Robert, Kirkcaldy
1876 Stenhouse, J. S., of Northfod, Dunfermline
1877 Stewart, Duncan, The Grange of Lindores, Newburgh
1892 Stewart, Hugh, Lumphinnans, Cowdenbeath
1894 Stewart, Wm., Ingrie, Leslie
1893 Stirling, John, Auchmuthy, Markinch
1890 Storrar, David, Land Surveyor, Cupar-Fife
1891 Storrar, Richard, Pyestone, Markinch
1889 Syme, John, Nether Strathkinness, St Andrews
1896 Terras, Thomas, Hillside, Ceres
1871 Thom, James, Whinnyhall, Burntisland
1875 Thom, James F., Wellsgreen, Windygates
1879 Thom, R. D., Pitlochie, Strathmiglo
1891 Thomson, Henry, Perceval, Buckhaven
1897 Thomson, James, jun., Humbie, Aberdour
1848†Thomson, Colonel John A., of Charleton, Colinsburgh
1896 Thomson, John R., Methilhill, Windygates
1877 Tod, James, Easter Cash, Strathmiglo
1873 Tulloch, James, Dales, Inverkeithing
1896 Tulloch, John B., Dales, Inverkeithing
1893 Turnbull, Mark, Randerston, Crail
1896 Waldie, Adam, Callange, Cupar-Fife.
1878 Walker, Arch., Banker, Auchtermuchty
1875 Walker, Thos., Demperston, Auchtermuchty
1882 Wallace, George, Lebanon House, Cupar-Fife
1861 Wallace, James, Brake, St Andrews
1891 Wallace, John, Duniface, Leven
1880 Wallace, T. A., Banker, Burntisland
1875 Wallace, Wm., Kincaple, Guardbridge
1891 Walls, Donald M., Grain Merchant, Dunfermline
1883 Walls, Robert, Grange, Burntisland
1892 Wardlaw, John, Tough Mill, Dunfermline
1893 Watson, Arthur, Kinnear, Leuchars
1873 Watt, Alex., 4 Home Park, Aberdour
1893 Watt, Frank M., Caldwell, Collessie
1882 Watt, W., Seed Merchant, Cupar-Fife
1890 Webster, Thomas, Nisbetfield, Ladybank
1874 Wedderburn, H. S., of Wedderburn, Birkhill, Cupar
1884 Weighton, J. G., of Priorletham, St Andrews
1889 Wemyss, Alex. Watson, Denbrae, St Andrews
1872 Wemyss, R. G. E., of Wemyss, Kirkcaldy
1894 Wilkinson, John, Newport, Fife
1875 Whyte, John, Lingohouse, St Andrews
1882 Wilson, Geo., Gladstone Cottage, Cupar
1892 Wilson, John Hardie, D.Sc., F.R.S.E., St Andrews—*Free Life Member*

Admitted
1880 Wilson, P., Seed-crusher, Burntisland
1882 Wilson, Robt. M., Fodbank, Dunfermline
1894 Wood, D. H., M.R.C.V.S., Thornton
1877 Wood, Major William, Falkland
1859 Young, A., Kinloch, Collessie
1875 Younger, J. B. B. C., Balgrummo, Leven

FORFAR

(Western Division).

1882†Airlie, The Earl of, Cortachy Castle
1881 Alexander, John, Ballindarg, Kirriemuir
1874 Anderson, Alex., Berryhill, Dundee
1890 Andrew, James M., Magdalenes, Kirkton, Dundee
1853 Arklay, John, Seafield, Broughty Ferry
1871 Arnot, Wm., Glamis Mains, Glamis
1884 Auchterlonie, Alex., Viewbank, Coupar-Angus
1886 Ballingal, Hugh, Ardarroch, Dundee
1889 Batchelor, Francis M., Craigie, Dundee
1890 Baxter, George Washington, Ashcliff, Dundee
1896 Bell, J. B., Burnton, Inverkeillor
1893 Bell, Pat. Arnot, Auchtertyre, Newtyle
1890 Bell, Thomas, of Belmont, Dundee
1894 Bell, William, Balnuith, Dundee
1890 Bell, William Forsyth, Barns of Claverhouse, Dundee
1890 Berry, James, Merchant, Dundee
1876 Black, John, Cortachy, Kirriemuir
1896 Brown, John G., Craighill, Dundee
1879 Bruce, Andrew, Jordanston, Meigle
1896 Bruce, William, Castle Street, Forfar
1867 Burr, Rev. P. Lorimer, D.D., Lundie Manse, Dundee
1861 Buttar, David, Corston, Coupar-Angus
1882 Buttar, Thomas A., Corston, Coupar-Angus—*Free Life Member*
1881 Cameron, James, Murthill Farina Works, Forfar
1871 Camperdown, The Earl of, Camperdown, Dundee
1896 Campbell, Wm., 191 Perth Road, Dundee
1890 Carmichael, James, Arthurstone, Ardler, Meigle
1858 Carnegie, W., yr. of Dunlappie, Coul, Forfar
1884 Clark, James, F.R.C.V.S., Abbeyhill, Coupar-Angus
1896 Clunie, George, Whitfield, Dundee
1893 Cowans, David S., of West Mains, Auchterhouse, Dundee
1881 Cowpar, James, Hillbank, Kirriemuir
1893 Cox, Edmund C., Beechwood, Dundee
1890 Cox, Edward, of Cardean, Meigle
1882 Cox, Geo. M., Dryburgh House, Dundee
1894 Crichton, And., Estate Office, Glamis
1890 Dewar, James C., Airlie Arms Hotel, Kirriemuir
1881 Duke, Wm., Angus Mills, Kirriemuir
1883 Duncan, John, Muirhouses, Kirriemuir
1879 Duncan, Patrick G., East Memus, Kirriemuir
1887 Duncan, Wm., Welltown, Coupar-Angus
1881 Duncan, W. G., Balkemback, Tealing, Dundee
1895 Durkie, Alex. F., Mill of Mains, Dundee
1887 Farquharson, Alex., Greenburn, Coupar-Angus
1894 Fenton, David, Kingennie, Dundee
1879 Ferguson, Jas., Balunie, Coupar-Angus
1893 Fergusson, R. A., of Ethiebeaton, Dudhope Works, Dundee
1895 Forrest, James, Banker, Kirriemuir
1890 Gardiner, Thomas J., Banchory, Coupar-Angus
1890 Gourlay, Henry, Balgay House, Dundee

Admitted
1879 Graham, D. M., Auctioneer, Forfar
1890 Grainger, John, Pitcur, Coupar-Angus
1890 Grant, Alex., Forfar
1890 Grant, John, Craig Mills, Dundee
1881 Guild, Thomas, Herdhill, Kirriemuir
1896 Guthrie, John, Grain Merchant, Forfar
1890 Halkett, John Gilbert Hay, Balendoch, Meigle
1870 Hanning, J. J., 31 Tait's Lane, Dundee
1871 Harris, Wm., Commission Agent, Alyth
1878 Henderson, G. D. C., Captain R.N., of Invergowrie, Dundee
1890 Henderson, William, Milton of Collace, Coupar-Angus
1889 Hendry, William, Mains of Coul, Kirriemuir
1888 Hunter, Wm., Beech Tower, Broughty Ferry, Dundee
1894 Isles, Jas., Spirit Merchant, Dundee
1890 Johnston, Alex., Castle of Mains, Dundee
1890 Johnston, John, 14 St Clement's Lane, Dundee
1890 Kidd, David, West Ardler, Meigle
1896 Kininmonth, J. A., 48 Castle Street, Forfar
1888 Kyd, Robert, Implement-maker, Coupar-Angus
1893 Laird, W. P., 73 Nethergate, Dundee
1897 Leitch, Richard G., Lochhead, East Wemyss
1894 Lindsay, Henry, Home Farm, Glamis
1896 Lowson, George, of Balgavies, Forfar
1890 Lyburn, John, Kinochtry, Coupar-Angus
1870 M'Farlane, William, 31 Benvie Road, Dundee
1865 M'Gavin, Robert, of Ballumbie, Dundee
1890 MacIntyre, Peter, Denfind, Monikie, Dundee
1890 M'Kay, Alexander, Mains of Auchterhouse, Lundie, Dundee
1890 Marshall, James Scott, Wynton Chemical Works, Dundee
1891 Martin, Robert, Baldovie, Kirriemuir
1890 Mathers, David, Hotel-keeper, Dundee
1894 Maxwell, David, Upper Drumgley, Forfar
1885 Menzies, W. D. Graham, Hallyburton, Coupar-Angus
1894 Mitchell, James, Nether Migvie, Kirriemuir
1886 Mitchell, William, Balnashanner, Forfar
1890 Murray, J. Douglas, 10 Windsor Terrace, Dundee
1891 Murray, Joseph, Dryburgh, Lochee, Dundee
1887 Myles, Rob., Coilamy, Cortachy, Kirriemuir
1867 Nicol, T. Monro, Littleton, Kirriemuir
1891 Nicoll, William, Carsebank, Forfar
1894 Ogilvy, John, Lisden, Kirriemuir
1871 Ogilvy, Sir Reginald H. A., of Inverquharity, Bart., Baldovan House, Dundee
1890 Pattullo, David, South Gask, Coupar-Angus
1885 Pattullo, William, 19 St Andrew Street, Dundee
1893 Pattullo, William, Fullarton, Meigle
1849 Powrie, James, of Reswallie, Forfar
1880 Primerose, A. G., Dock Street, Dundee
1868 Ralston, Andrew, Glamis House, Glamis
1896 Ralston, Gavin, Glamis House, Forfar
1876 Reid, George, Ladywell, Kirriemuir
1873 Reid, James, Kilmundy, Glamis
1897 Rennie, William, Petterden, Tealing, Dundee
1879 Ritchie, R. B., Accountant, Dundee
1890 Robertson, Alexander, of Burnside, Forfar

Admitted

1895 Robertson, John, Wharncliffe Estate Office, Newtyle

1890 Robertson, Wm. Brown, Dudhope House, Dundee

1862 Rogers, James S., Rose Mill, Dundee

1881 Rogers, Wm., Ph.D., Rose Mill, Dundee

1881 Ross, Wm., 93 Brook Street, Broughty Ferry

1896 Rough, William, Longbank, Kirriemuir

1890 Scott, George C., The Retreat, Perth Road, Dundee

1894 Scott, Jas., Suttieside, Forfar

1882 Scott, Robert, 56 Dundee Road, Forfar

1888 Sharp, Andrew, Norlands, West Albany Terrace, Dundee

1890 Sharp, John, Balmuir House, Dundee

1890 Short, James, Royal Hotel, Coupar-Angus

1894 Sim, Jas., Kilnhill, Kirriemuir

1889 Smart, John B., Pitairlie, Monifieth, Dundee

1877 Smith, Thomas, Powrie, Dundee

1884 Smith, Thomas, Mains of Fowlis, Dundee

1890 Spreull, Andrew, V.S., Yeaman Shore, Dundee

1896 Steele, Thomas, Foulis Easter, Dundee

1894 Stewart, John F., Novanbank, Forfar

1893 Stewart, William, New Mill, Tannadice, Forfar

1891 Strachan, James, West Pilmore, Longforgan, Dundee

1867*†STRATHMORE, The Earl of, Glamis Castle

1890 Tasker, George, Arnbog, Meigle

1889 Tasker, William, East Camno, Meigle

1890 Thoms, Thomas S., Benvie, Invergowrie, Dundee

1893 Thomson, David Couper, 'Courier' Office, Dundee

1896 Thomson, Sam. C., Balmossie, Broughty Ferry

1881 Turnbull, George, Baldoukie, Tannadice

1896 Waterston, D. M., Cortachy, Kirriemuir

1880 Watson, Wm., Downicken, Dundee

1894 Webster, J. A., Commercial Bank, Forfar

1896 Webster, Patrick, of Flemington, Forfar

1881 Wedderspoon, George, Balgavies, Forfar

1868 White, John F., Craigtay, Dundee

1891 White, J. Martin, of Balruddery, Dundee

1861 Whitton, And., of Couston, Newtyle

1884 Whyte, Archibald, Inverquharity, Kirriemuir

1870 Whyte, Archibald, jun., Nether Hayston, Forfar

1890 Whyte, James, Upper Hayston, Glamis

1871 Whyte, John, West Denoon, Glamis

1868 Whyte, William, Spott, Kirriemuir

[illegible], Spott, [illegible]

1881 Wilkie, James, Solicitor, Kirriemui

1896 Will, Alexander, Clepington, Dundee

1888 Willsher, George, Pitpointie, Auchterhouse, Dundee

1878 Wilson, T. Mackay, Solicitor, Kirriemuir

1890 Young, John, Balmyle, Meigle

KINROSS.

1882 ADAM, Sir Chas. E., of Blairadam, Bart.

1861 Anderson, Robert H., Tillyrie Cottage, Milnathort

1893 Barclay, John, Pittendreich, Kinross

1896 Bayne, John, Calf-dealer, Kinross

1868 Beath, David, Arlary, Milnathort

1873 Begg, R. Burns, Sheriff-Clerk, Kinross

1896 Dawson, James A. Ramage, of Balado, Kinross

1886 Ewing, Francis, Bank Agent, Milnathort

1884 Flockhart, Wm., of Annacroich, Kinross

1884 Greig, Andrew, of Holeton, Milnathort

1883 Greig, John, of Tillyrie, Milnathort

Admitted

1885 Hepburn, John, V.S., Milnathort

1878 Mitchell, Jas., Aldie Castle, Fossoway

1882 Montgomery, H. Jas., of Hattonburn, Milnathort

1862 Morrison, J. B. B., of Finderlie, Kinross

1896 Porteous, Colonel James, of Turfhills, Kinross

1871 Reid, George, of Tillyrie, Milnathort

1896 Rowat, Robert, jun., Orwell, Kinross

1881 Russell, T. Purves, of Warroch, Milnathort

1890 Simpson, James, of Mawcarse, Milnathort

1878 Simpson, Jas., North Lethans, Kinross

1884 Steedman, James, of Fruix, Kinross

1884 Steedman, Thos., Bank Agent, Kinross

1893 Taylor, William, Eastbank, Kinross

1873 Terris, J., jun., Dullomuir, Blair Adam

1870 Tod, Thos. M., of West Brackly, Kinross

1884 Tod, Wm., of East Brackly, Kinross

1874 Waddell, George, Lassodie Mill Colliery, Blair Adam

1877 Walls, James, Lochran, Kinross

1891 Young, Robert, Sunnyside, Kinross

PERTH

(EASTERN DIVISION).

1896 Adam, James, Braideston, Meigle

1893 Adamson, James, Grange, Errol

1896 Allan, John, Busby, Methven, Perth

1878 Allan, John, Culthill, Dunkeld

1887 Allan, William, Kinnon Park, Methven, Perth

1897 Anderson, A. B., County Club, Perth

1870 Anderson, Archibald Turnbull, Perth

1878 Anderson, Peter, Duneaves, Fortingal

1871 Anderson, Robert, Balbrogie, Coupar-Angus

1896 Annand, William, Auctioneer, Alyth

1860*†ATHOLL, The Duke of, K.T., Blair Castle, Blair Atholl

1841 ATHOLL, The Duchess Dowager of, Dunkeld

1870 Ballingall, A. H., W.S., Perth

1895†BALVAIRD, Lord, Scone Palace, Perth

1896 Barnett, Thos., Wester Ballindean, Inchture

1893 Baxter, Wm., jun., Tophead, Stanley

1870 Beattie, Jas., Rockdale Cottage, Perth

1887 Bell, James H., of Rossie, Forgandenny

1884 Bett, Thomas, Urlar, Aberfeldy

1884 Black, Captain, of Balgowan, Perth

1893 Boyd, James Laurence, of Glendouglie, Glenfarg

1883*†BREADALBANE, The Marquis of, K.G., Taymouth Castle, Aberfeldy

1871 Brown, Peter, Milton of Luncarty, Redgorton

1896 Browning, John M., Dupplin Gardens, Perth

1897 Bruce, George, of Rosefield, Balbeggie

1896 Bullions, John, Byres, Guildtown, Perth

1877 Butter, Albert, Union Bank, Perth

1895 Butter, Arch. Ed., of Faskally, Pitlochry

1894 Caird, Dr J. Hay, Ballinloan, Rannoch

1871 Cairns, Robert, Bertha Park, Perth

1882 Calder, Jas., of Ardargie, Forgandenny

1888 Cameron, Donald, Roro More, Aberfeldy

1887 Cameron, Duncan, Kinloch-Rannoch

1896 Cameron, John, Pepper Knowes, Glencarse, Perth

1892 Campbell, Alexander, Borland, Fernan, Killin

1896 Campbell, Dun., Bonkle Cottage, Young Street, Craigie, Perth

1887 Campbell, Lieut.-Col., General Prison, Perth

Admitted
1896 Campbell, Major J. C. L., Royal Engineers, of Achalader, Blairgowrie
1896 Campbell, Peter, Kerrowmore, Glenlyon, Aberfeldy
1897 Carruthers, William, M.R.C.V.S., Perth
1871 Chalmers, James, 11 Charlotte Street, Perth
1879 Chalmers, John, Westwood, Stanley
1897 Chalmers, Thos., 42 Tay Street, Perth
1896 Chalmers, Wm., New Mains of Fingask, Errol
1890 Chisholm, Colin Edward, Grange of Elcho, Perth
1871 Chrystal, George, Engineer, Perth
1871 Clark, Robert, Taybank House, Errol
1896 Constable, Robert, Balledgarno, Inchture
1890 Cox, Albert E., of Dungarthill, Dunkeld
1890 Cox, Alfred W., Westwood, Balthayock, Perth
1890 Cox, William Henry, yr. of Snaigow, Dunkeld
1860 Crawford, William, Bridge of Earn, Perthshire
1896 CURRIE, Sir Donald, of Garth and Glenlyon, K.C.M.G., M.P., Garth Castle, Aberfeldy
1879 DALGLEISH, Sir Wm. Ogilvy, of Errol Park, Bart., Errol
1896 Davidson, William, Mavisbank, Perth
1894 Dewar, John A., Lord Provost of Perth
1896 Dickie, William B., Whitehills, Inchture
1846 Dickson, John, W.S., Greenbank, Perth
1871 Doe, John, Errol
1896 Doig, George, Drumartherty, Dunkeld
1893 Donaldson, Jas., Legerlaw, Coupar-Angus
1879 Dow, David, Balmanno, Bridge of Earn
1879 Dow, James, Clathybeg, Auchterarder
1865 Duff, James, Burghmuir, Perth
1878 Dunn, Wm., Kenmore Mains, Aberfeldy
1896 Dyce, William, Errol Park, Errol
1874 Fell, John Duncan, Flesher, Blairgowrie
1894 Fenwick, James, Kirkhill, Redgorton, Perth
1879 Ferguson, W. S., Pictstonhill, Perth
1879 Fergusson, Donald, Dalcapon, Ballinluig
1861 Fisher, Donald, The Hotel, Pitlochry
1881 Fleming, Rev. A., of Inchyra, Hamilton House, Perth
1897 Forbes, James, Denshaugh, Strathbraan, Dunkeld
1896 Forrest, T. L., Bankhead, Alyth
1892 Fotheringham, Walter Stewart, of Fotheringham and Murthly
1879 Fraser, John M., Auction Mart, Perth
1897 Frazer, John, Glenfoot, Abernethy, Perthshire
1874 Galloway, Alex., C.E., Dirgarbh, Aberfeldy
1890 Galloway, David, Grain Merchant, Perth
1884 Galloway, Thomas T., c/o D. Galloway, Perth
1884 Gammel, Colonel J. H. H., of Lethendy, Meikleour
1871 Geekie, R., of Baldowrie, Rosemount, Blairgowrie
1887 Gellatly, William, Balgowan, Perth
1871 Gibson, Charles, Pitlochry
1896 Gilbert, T. Johnson, of Coldoch, Blair-Drummond, Stirling
1875 Gillespie, James J., St Colmes, Ballinluig
1896 Gilmour, William, Pitfour brickworks, Glencarse, Perth
1873 Gold, Joseph, Murthly Farm, Perth
1896 Goodall, William, Snaigow, Dunkeld
1887 Gow, Geo., Dunalastair Hotel, Rannoch
1896 Graham, Alex., Viewfield, Bridge of Earn
1881 Graham, A. G. Maxtone, yr. of Cultoquhey, Crieff

Admitted
1897 Graham, A. M. B., Newton House, Glencarse
1896 Graham, Lt.-Col. Henry Stewart Murray, of Murrayshall, Perth
1848 Graham, J. Maxtone, of Cultoquhey, Crieff
1896 Graham, James, Scones, Lethendy, Perth
1888 Grahame, John, Sheriff - Substitute, Newton House, Glencarse
1896 Graham, John, Tippermallo, Methven, Perth
1887 Grant, George, Tullyneddie, Blairgowrie
1879 Grant, John S., Tullymet, Ballinluig
1889 Grant, Robert, Bengarth, Blairgowrie
1880 Gray, George, of Bowerswell, Perth
1896 Gray, James, Banker, Aberfeldy
1894 Gray, Thomas, Fingask, Rhynd, Perth
1861 Greig, T. Watson, of Glencarse, Perth
1895 Greig, Thomas, yr. of Glencarse, Perth
1896 Grieve, William B., Merchant, Alyth
1871 Grimond, Alex. D., of Glenericht, Blairgowrie
1871 Haggart, Peter, Breadalbane Mills, Aberfeldy
1896 Halley, Robert, Grain-merchant, Perth
1896 Harrower, William, Tomnacroich, Fortingall, Aberfeldy
1881 Hart, Andrew, Aberdalgie, Perth
1870 Hay, Alexander, Easter Cultmalundie, Perth
1890 Haynes, George G., Aberfeldy
1896 Henderson, Robert, Hillyland, Perth
1894 Hollingworth, Thos., New Mains, Inchture
1896 Hope, Robert, jun., Huntingtower Mains, Perth
1897 Hopkinson, S. D., of Duncrievie House, Glenfarg (14 Campden Hill Road, London)
1893 Howieson, James, Rannagullzion, Blairgowrie
1894 Howison, Robert, East Inchmichael, Errol
1895 Hunter, John *(of Hay & Co.)*, Fingask, Perth
1871 Hunter, Patrick, Waterybutts, Errol
1882 Hutcheson, Andrew, Beechwood, Perth
1895 Hutcheson, William, Airleywight, Bankfoot
1893 Jackson, Thos. D., Live Stock Salesman, Perth
1896 Jackson, Thos. C., Tullylumb, Perth
1897 Jameson, Henry, Claremont, Perth
1884 Jameson, Martin, Fernhill, Perth
1852 Jameson, Melville, Solicitor, Perth
1880 Jamieson, Alexander, 31 Barossa Place, Perth
1880 Jamieson, John, 31 Barossa Place, Perth
1890 Japp, William, of Broomhall, Alyth
1871 Johnston, James, Cattle-dealer, Perth
1871 Johnston, Stewart J., Loanleven, Huntingtower, Perth
1893 Keay, Peter, Marybank, Herriotfield, Logie Almond
1896 Keiller, J. Thomson, Caledonian Road, Perth
1896 Keir, David, Ladywell, Dunkeld
1881 Kerr, Thomas, Forehill, Caputh
1894 Kidd, George, Drumkilbo, Meigle
1878 KINCAIRNEY, The Hon. Lord, Dunkeld (6 Heriot Row, Edinburgh)
1896 Kinloch, Charles Y., of Gourdie, Dunkeld
1877 KINLOCH, Sir John G. S., of Kinloch, Bart., M.P., Meigle
1879 KINNAIRD, Lord, Rossie Priory, Inchture
1884 Kinnear, Chas., Tarsappie, Perth
1896 KINNOUL, The Earl of, Dupplin Castle Perth
1879 Kyd, George, Hilton, Perth

Admitted
1896 Lamb, Alex., Freeland, Forgandenny
1896 Lamond, James, Inverqueich, Alyth
1857 Latham, P. R., Taybank, Caputh, Dunkeld
1894 Leslie, Thomas, Kinloch Arms Hotel, Meigle
1879 Livingston, John, Balarchibald, Ballechin, Ballinluig
1896 Love, Thomas, Auctioneer, Perth
1884 Lumsden, J. D., Huntingtowerfield, Perth
1884 Macdiarmid, Donald, Bank of Scotland, Aberfeldy
1875 M'Diarmid, Duncan, Camusericht, Rannoch
1896 Macdonald, Alex., Craigraven, Kincarrathie, Perth
1855 Macdonald, Archd. Burns, Perth
1896 M'Donald, David, 23 York Place, Perth
1887 Macdonald, Duncan, Comrie Farm, Aberfeldy
1890 M'Donald, James, City Mills, Perth
1896 Macdonald, James, Craigraven, Kincarrathie, Perth
1895 M'Donald, J. M., Welton, Blairgowrie
1880 Macdonald, Montague, of St Martins, Perth
1871 Macdonald, William, "The Athole," Pitlochry
1860 M'Dougall, Archd., Ardtalanaig, Perthshire
1896 M'Dougall, Donald, Claggan, Kenmore
1871 M'Dougall, John, Goodlyburn, Perth
1874 Macduff, Alex., of Bonhard, Perth
1896 M'Duff, John, Balnacraig, Fortingall
1896 Macfarlane, John, Muir Lodge, Rannoch
1883 M'Gillewie, R., Union Bank, Dunkeld
1882 M'Gregor, Athole, Eastwood, Dunkeld
1872 Macgregor, Donald, Dalnabo Cottage Ballinluig
1894 M'Gregor, Malcolm, Caledonian Road, Perth
1896 Mackendrick, William, 16 Marshall Place, Perth
1862 MACKENZIE, Sir Alex. M., of Delvine, Bart., Dunkeld
1895 Mackenzie, Capt., Balboughty, Perth
1890 Mackenzie, George A., Solicitor, Perth
1885 Mackenzie, R. W. R., Stormontfield, Perth
1897 Mackenzie, William A., Factor, Faskally, Pitlochry
1878 Mackie, J. H. J., Invermay, Forgandenny
1896 M'Kinlay, James, Balnahanaid, Glenlyon, Aberfeldy
1897 M'Kinnon, James, Barnhill, Broughty-Ferry
1890 Mackinnon, John, Auctioneer, Blairgowrie
1890 M'Laggan, J. G., Woodburn Cottage, The Cairnies, Glenalmond, Perth
1897 M'Laren, A., Windyedge, Perth
1897 M'Laren, Alex., Auchnagie, Ballinluig
1879 M'Laren, Charles, Cally Lodge, Dunkeld
1896 M'Laren, John, Retreat House, Scone
1879 M'Laren, Wm., Pittendrigh, Meikleour
1880 MacLeish, Wm., Town-Clerk, Perth
1881 M'Leish, Dan., Wester Keillor, Methven
1877 M'Leish, G. S., Wester Drumatherty, Dunkeld
1884 M'Leish, Jas., Byres of Murthly, Perth
1897 MacLeish, Bailie James, 15 Mill Street, Perth
1890 M'Millan, David, Calvine, Perthshire
1892 M'Naughton, Alex., Manufacturer, Pitlochry
1890 MacNaughton, James, Ivan Villa, Aberfeldy
1896 MacNaughton, Peter, Remony, Kenmore

Admitted
1879 MacRitchie, David, of Easter Logie, Blairgowrie
1833†MANSFIELD, The Earl of, K.T., Scone Palace, Perth
1896 MARJORIBANKS, Hon. Coutts, Gourdie, Dunkeld
1887 Marshall, James Burt, of Luncarty, Perth
1896 Marshall, Robert, Wood-merchant, Killiecrankie
1885 Marshall, Robert, Denmarkfield, Perth
1887 Martin, Andrew, Montabor, Kinnoull, Perth
1896 Martin, H., Flowerdale, Collace
1895 Martin, James, Eastbank, Longforgan
1884 Matthew, John M., yr. of Auchmague, Perth
1887 Maxwell, William, of Donavourd, Pitlochry
1895 Meiklejohn, T. N., Estates Office, Murthly
1895 Meldrum, A. G., Manse of Logierait, Ballinluig
1841 Menzies, Fletcher Norton, Balmacneil, Ballinluig
1869 Menzies, Dr James, of Pitnacree, Ballinluig
1877 Menzies, Neil James, yr. of Menzies
1841†MENZIES, Sir Robert, of Menzies, Bart., Camserney, Aberfeldy
1893 Menzies, Robert, Millhaugh, Herriotfield, Logie Almond
1879 Menzies, Robert, Tirinie, Aberfeldy
1887 Menzies, Wm. J. B. Stewart, of Chesthill, Aberfeldy
1885 Middleton, Captain W. F., Baldarroch, Murthly
1895 Millar, David, Tullymoran, Logie Almond
1893 Millar, James Robert, Flawcraig, Errol
1887 Millar, Robert H., of Blair Castle, Culross
1896 Millar, William, Keillor, Coupar-Angus
1871 Millar, Wm., Over Kinfauns, Perth
1896 Miller, William, Woodhead, Aberdalgie, Perth
1890 Miller, George A., W.S., Perth
1893 Miller, William, jun., Durdie, Errol
1877 Mitchell, Hugh, Banker, Pitlochry
1882 Mollison, James, Ruthven, Meigle
1852 MONCRIEFF, Col. Sir Alex., K.C.B., F.R.S., Bandirran, Perth
1888 Moncrieff, R. H., Potterhill, W.S., Perth
1889 MONCRIEFFE, Sir Robt. D., of Moncrieffe, Bart., Perth
1896 Morrison, John, West Inchmichael, Errol
1896 Morton, David, North Muirton, Perth
1887 Morton, John, Muirton, Perth
1879 Morton, R. G., Engineer, Errol
1883 Munro, Chas., Union Bank, Aberfeldy
1895 MURRAY, Hon. Alexander David, Ardgilzean, Perth
1896 MURRAY, Hon. Alan D., Scone Palace, Perth
1871 Murray, C. A., Taymount, Stanley
1896 Murray, David, Balgersho Works, Coupar-Angus
1891 Murray, John, B.Sc., Glenearn, Bridge of Earn—*Free Life Member*
1879 Nairne, T. G., Dunsinnan, Perth
1874 Nairne, William, of Dunsinnan, Perth
1896 Nicol, Alex., Breadalbane Arms Hotel, Aberfeldy
1896 Nimmo, Robert, 9 Pitcullen Crescent, Perth
1844 Ogilvy, Lieut.-Col. Thos. W., of Ruthven, Meigle
1896 Osler, James B., Coupar-Angus
1871 Panton, John, of Dalnagairn and Carsie, Blairgowrie

Admitted
1880 Paton, Jas., jun., Obney, Bankfoot
1893 Paton, Wm. B., Monorgan, Longforgan
1892 Paterson, Chas. J. G., of Castle Huntly, Longforgan
1893 Pattullo, T. M., Ashmore Farm, Blairgowrie
1896 Peddie, David, Forteviot Farm, Forteviot
1884 Philp, Alexander, Mains of Duncrub, Dunning
1871 Pirrie, James P., Coachbuilder, Perth
1896 Pitcaithley, Alex., Jeanie Bank, Old Scone, Perth
1891 Pitcaithly, Geo., West Dron, Bridge of Earn
1877 Pople, George, Newhouse, Perth
1896 Pullar, Albert E., Durn, Perth
1896 Pullar, Herbert S., Rosebank, Perth
1896 Pullar, James F., Rosebank, Perth
1871 Pullar, Robert, of Tayside, Perth
1896 Pullar, Rufus D., Brahan, Crieff Road, Perth
1884 Rae, W. A., Kingswood, Murthly
1871 RAMSAY, Sir James H., of Bamff, Bart., Alyth
1854 Rattray, Lieut.-Gen. J. C., of Craighall, C.B., Blairgowrie
1896 Reid, James, Coachbuilder, Princes St., Perth
1897 Reid, James, jun., Scone Road, Perth
1894 Rhind, John, Wester Kinloch, Blairgowrie
1896 RICHARDSON, Sir E. A. Stewart, of Pitfour, Bart., Glencarse, Perth
1890 Richardson, Colonel Edmund R. Stewart, of Ballathie, Stanley
1861 Richmond, John, Dron, Bridge of Earn
1879 Robertson, Alexander, Ballechin, Ballinluig
1893 Robertson, Daniel, Mains of Fordie, Dunkeld
1879 Robertson, Don., Blackhill, Ballinluig
1882 Robertson, Donald, Borlick, Dunkeld
1880 Robertson, E. W., of Auchleeks, Blair Athole
1881 Robertson, James, Taymount, Stanley
1876 Robertson, J. S., of Edradynate (Colquhalzie, Auchterarder)
1864 Robertson, John, Old Blair, Blair Athole
1896 Robertson, John, Meggerine Estate Office, Aberfeldy
1879 Robertson, Wm., of Craiglochie, Perth
1883 Robertson, Wm., Potato Merchant, Perth
1879 Robertson, Wm., Engineer, Perth
1896 Robertson, William, Blackhaugh, Dunkeld
1883 Rollo, James A., County Club, Perth
1871 Roy, Thomas, Craigclowan, Perth
1897 Roy, William, Cultmalundie, Tibbermuir, Perth
1896 Sandbach, C. Craigie, of Glendoick, Glencarse
1887 Sandeman, Col. F. S., Stanley House, Stanley
1891 Sandeman, Lt.-Col. Geo. G., of Fonab, Pitlochry
1879 Scott, John, Eastertyre, Ballinluig
1883 Scrimgeour, Peter, Balboughty, Perth
1896 Scrimgeour, Thomas, Halfway House, Errol
1891 Seaton, Donald, Cronan, Coupar-Angus
1890 Sellar, James T., W.S., Perth

Admitted
1896 Shaw, James, Estate Office, Dunalastair
1893 Sidey, David, Middle Gourdie, Dunkeld
1896 Simpson, James, Friarton, Perth
1889 Sinclair, John, Greenhill, Dunning
1859 Small, James, of Dirnanean, Pitlochry
1887 Smart, James, Architect, Perth
1896 Smith, David, Corsiehill, Perth
1891 Smith, James, Cranley, Meikleour
1896 Smith, John F., Eastfield, Bridge of Earn
1876 Smythe, Colonel David M., of Methven, Perth
1896 Soutar, Robert, Methven Street, Perth
1896 Spalding, James, V.S., Riverlea, Blairgowrie
1889 Speedie, Matthew, Pitversie, Abernethy
1881 Speid, James, Forneth, Dunkeld
1896 Stark, James, Coates of Fingask, Perth
1890 Stead, W. F., Ballindean House, Inchture
1880 Steel, Adam, yr. of Blackpark, Perth
1896 Stephenson, John B., Broombarns, Forgandenny
1891 Stevens, A. B., Mains of Kilgraston, Bridge of Earn—*Free Life Member*
1893 Stewart, Alex. Blair, Balnakeilly, Pitlochry
1896 Stewart, Alex. Lodge, Logiealmond, Perth
1896 Stewart, Edward G. M'K., Nether Logie, Meigle
1889 Stewart, Daniel, Muirhall, Perth
1870 Stewart, Donald, Clachan, Calvine
1881 Stewart, D. D., Castlehill, Inchture
1888 Stewart, H. D., Strathgarry, Blair Athole
1871 Stewart, James, Blair Athole
1876 Stewart, James, Woodside Farm, Coupar-Angus
1883 Stewart, J. F., Newmill, Stanley
1896 Stewart, Peter, Kirkton of Abernyte, Inchture
1896 Stratton, David, Clashigar, Logiealmond, Perth
1896 Stuart, David M., Merchant, Pitlochry
1896 STUART-GRAY, Hon. F. J., of Kinfauns, Perth
1893 Sutherland, William, Peel, Perth
1897 Tait, Rev. Walter, St Madoes, Glencarse, Perth
1878 Talbert, Peter, Glenericht, Blairgowrie
1896 Thom, James, Cambusmichael, Guildtown, Perth
1881 Thomson, Thos., Cordon, Abernethy
1896 Todd, James, Inchyra Manor, Glencarse, Perth
1896 Todd, William, Mains of Gartly, Methven
1896 Watson, W. L., Ayton House, Abernethy
1881 Wedderspoon, Thos., Live Stock Salesman, Perth
1862 White, Dr Francis, Perth
1892 Whitson, W., Isla Park, Coupar-Angus
1871 Whyte, Angus, Kipney Cottage, Harrietfield, Logiealmond, Perth
1884 Whyte, Wm., Muirhead, Forgandenny
1896 Wilkie, Alex., Pitlandie, Moneydie, Perth
1879 Wilkie, David, Market Hotel, Caledonian Road, Perth
1896 Wilson, James A., The Cairnies, Glenalmond, Perth
1873 Wood, C. L., of Freeland, Forgandenny
1896 Wyllie, Scott, Dalcrue, Methven, Perth
1894 Wynd, David, Newbigging, Errol
1894 Young, Robert, Dunkenny, Meigle

3.—STIRLING DISTRICT.

EMBRACING THE

COUNTIES OF CLACKMANNAN, DUMBARTON, PERTH (WESTERN DIVISION), AND STIRLING.

CLACKMANNAN.

Admitted	
1880	Alexander, James, Inch of Ferryton, Clackmannan
1887	Alexander, William, Loanside, Clackmannan
1871	Allan, William, Grassmainston, Clackmannan
1887	Arrol, Archd. T., Mill Grove, Alloa
1873†	**Balfour** of Burleigh, Lord, Kennet, Alloa
1889	Blair, Charles, Glenfoot, Tillicoultry
1891	Cairns, John, Dollarbank, Dollar
1872	Christie, John, of Cowden, Dollar
1891	Clarke, John, Meadowhill, Clackmannan
1850	Connal, Wm., of Solsgirth, Dollar
1877	Crawford, John, High Street, Alloa
1872	Dewar, James, Balliliesk, Dollar
1892	Dobie, W. H., of Dollarbeg, Dollar
1893	Donaldson, Robert, Tullibody, Alloa
1873	Drysdale, David, Lorns Hill, Alloa
1800	Drysdale, William, King o' Muirs, Alloa
1873	Fisher, Donald, Jellyholm, Alloa
1897	Forbes, Robert, Kennet, Alloa
1873	Galashan, Charles C., Saddler, Alloa
1893	Gall, William, King Street, Alloa
1896	Haig, Alex. P., Blairhill, Rumbling Bridge
1886	Haig, Robert, Dollarfield, Dollar—*Free Life Member*, 1887
1875	Haig, W. J., of Dollarfield, Dollar
1878	Hare, Colonel, Blairlogie, Stirling
1868	Henderson, Robert, Nether Carsebridge, Alloa
1893	Jeffrey, Robert, Meadowend Farm, Clackmannan
1892	Kinross, D. A., Hillend, Clackmannan
1864	Kinross, John, Hillend House, Clackmannan
1874	Knox, Robert, Woodside, Cambus, Alloa
1888	Lang, James, Aitkenhead Farm, Clackmannan
1889	Leishman, William, of Broomrigg, Dollar
1882	M'Gregor, Alex., Craigton, Clackmannan
1891	M'Laren, William, Longcarse, Alloa
1893	M'Leod, Geo., Land-Steward, Harvieston Castle, Dollar
1893	M'Nab, Alexander, Middleton Kerse, Menstrie
1873	Macnab, James, of Middleton Kerse, Menstrie
1884	Macnab, John, Glenochil House, Menstrie
1890	Mair, William, Gartary, Clackmannan
1890	**Mar** and **Kellie**, The Earl of, Alloa Park, Alloa
1893	Millar, John M., Sheardale Haugh, Dollar
1848	Mitchell, Andrew, Alloa
1873	Moir, James M'Arthur, of Hillfoot, Dollar
1893	Norval, Alex., Solicitor, 38 High Street, Alloa
1875	Orr, James, of Harvieston, Dollar
1893	Peebles, James, Land-Steward, Naemoor, Rumbling Bridge
1869	Robertson, Rev. A. Irvine, Clackmannan
1878	Simpson, James, Tower, Alloa
1875	Thomson, Thomas, Bankhead, Alloa
1873	Young, George, Auctioneer, Dollar
1879	Younger, George, Brewer, Alloa
1889	Younger, James, Arns Brae House, Alloa

DUMBARTON.

1879	Anderson, James, Garbal, Crianlarich
1859	Anderson, John, Dullatur, Cumbernauld
1873	Anderson, John, Merkins, Alexandria
1872	Breingan, A., Merchant, Helensburgh
1894	Brock, Hugh B. P., Auchenheglish, Alexandria, N.B.
1857	Buchanan, Alex. Norwood, Milngavie
1873	Buchanan, David, Garscadden Mains, Bearsden
1873	**Buchanan**, Sir Geo. H. Leith, of Ross, Bart., Alexandria
1861	Burns, J. W., of Kilmahew, Cardross
1857	Calder, James, Colgrain, Cardross
1888	**Campbell**, Lady, of Garscube, Maryhill
1847	Campbell, J., of Tillichewan, Alexandria
1888	Campbell, J. A., Broomley, Alexandria
1889	Campbell, Wm. Middleton, of Colgrain, Dumbarton (23 Rood Lane, London)
1807	Collins, Hugh Brown, Garscadden, New Kilpatrick
1873	Colquhoun, George, Shemore, Luss
1872	**Colquhoun**, Sir James, of Luss, Bart., Rossdhu, Luss
1881	Cullen, William, Barbegs, Croy
1857	Dalrymple, James, of Woodhead, Kirkintilloch
1895	Davie, William, jun., Main Street, Alexandria, N.B.
1877	Dennistoun, J. W., Auchenlea, Row
1868	Douglas, Archd. C., of Mains, Milngavie
1881	Duncan, James, yr. of Auchendavie, Kirkintilloch
1881	Duncan, John, Auchenbee, Croy
1881	Duncan, Thos., Dullatur, Cumbernauld
1857	Ewing, Alexander Crum, of Keppoch, Cardross

Admitted
1896 Ferguson-Buchanan, G. J., of Auchentorlie, Bowling
1880 Findlay, R. E., of Boturich, Alexandria
1872 Galbraith, John, Edentaggart, Luss
1893 Galloway, Thomas, of Glenlorum House, Bearsden
1863 Gilmour, John, of Mount Vernon, Row
1881 Gilmour, William E., Woodbank, Alexandria
1881 Graham, George, jun., Easter Board, Gartshore, Croy
1864 Jack, John S., Adrigbank, Milngavie
1873 Jardine, Andrew, Ballemenoch, Helensburgh
1888 Kennedy, James, Chesters, Bearsden
1854 Lang, William, Ledmore, Helensburgh
1893 Leith, Alex. Wellesley, yr. of Ross, Dumbartonshire (Western Club, Glasgow)
1875 Lumsden, James, of Arden, Alexandria
1888 MacBrayne, David, yr. of Glenbranter, Auchenteil, Helensburgh
1873 Macdonald, John, Boquhanran, Dalmuir
1892 M‘Farlan, Coll Jas. Turner, Stronafyne, Arrochar
1851 M‘Farlan, John, Faslane, Garelochhead
1892 Macfarlan, Parlan, Faslane, Garelochhead
1873 M‘Farlane, Colin, Strone, Glenfruin, Garelochhead
1873 M‘Farlane, Duncan, Greenfield, Garelochhead
1872 M‘Indoe, James, Glenmolachan, Luss
1865 Mackenzie, John, Letter Farm, Cove
1838 Mackenzie, Robert D., of Caldarvan, Alexandria
1878 Mackinlay, William, Ardoch, Cardross
1873 Maclachlan, Colin, Woodend, Helensburgh
1888 M‘Lean, Thos., Banker, Alexandria
1872 M‘Murrich, James, Stuckievullich, Arrochar
1882 M‘Nab, Robert, Luss Hotel, Loch Lomond
1876 M‘Nair, Robert, Westertown, New Kilpatrick
1867†Martin, John M., of Auchendennan, Alexandria, N.B.
1884 Millar, James, Firkin, Arrochar
1883 Murray, David, LL.D., Moore Park, Cardross
1881 Park, Alex., Gartshore, Croy, Glasgow
1876 Robertson, R. W., Rockingham, Kilcreggan
1894 Weir, James, Woodilee Farm, Lenzie—*Free Life Member*
1882 Whitelaw, Alex., of Gartshore, Croy
1883 Wilson, James, Luss Estates Office, Helensburgh
1856 Young, James, Broadholm, Duntocher

PERTH

(Western Division).

1883 Anderson, A. H., Kippendavie Estate Office, Dunblane
1857 Ballingall, D., Factor, Blairdrummond
1873 Barty, Jas. W., Solicitor, Dunblane
1883 Blackett, J. S., Galvelbeg, Crieff
1861 Cairns, William, Belhie, Auchterarder
1879 Campbell, Duncan, Dunderamh, Killin
1896 Campbell, James, Tullich, Killin
1871 Carrick, Charles, Baad, Stirling
1872 Carrick, T. A., Easter Cambusdrennie, Stirling
1881 Christie, Gilbert, Auchlyne, Killin
1882 Cochran, Wm., Overdale, Dunblane
1874 Colquhoun, Rev. J. E. Campbell, Ledcameroch, Dunblane
1896 Combe, Jas. Scarth, Blair Mains, Culross

Admitted
1882 Cox, George A., of Invertrossachs, Callander
1882 Cox, James C., Invertrossachs, Callander
1879 Craig, John, Innergeldie, Comrie—*Free Life Member*
1880 Craig, William, Gwydyr House, Crieff—*Free Life Member*
1883 Crawford, Thos., Dumawhance, Crieff
1881 Crerar, Alex., Annfield, Callander
1871 Curr, Henry, Pitkellony House, Muthill
1896 Dewar, Peter, Arnprior, Port of Menteith
1894 Dougal, James, Blaircessnock, Port of Monteith
1869†Drummond, Col. Home, of Blairdrummond, Stirling
1890 Duncan, Hector Macduff, yr. of Damside, Auchterarder
1876 Dundas, Chas. Henry, Dunira, Crieff
1882 Dundas, Colin M., Commander R.N., of Ochtertyre, Stirling
1894 Dunn, Jas., Inverardoch Mains, Doune
1864 Edington, Peter, Thornhill, Muthill
1873 Edmond, William, Kippendavie Mains, Dunblane
1887 Fletcher, Angus, Auchtertyre, Tyndrum
1876 Forbes, Arthur Drummond, of Millearne, Auchterarder
1896 Gardiner, James, Rosemount, Auchterarder
1861 Gardiner, Robert, of Rottearns, Henhill, Forteviot
1884 Græme, Robert, of Garvock, Bridge of Earn
1897 Graham-Stirling, Captain Carolus Home, of Strowan, Crieff
1896 Gray, D. J. Thomson, Innerpeffrey Lodge, Crieff
1859 Grieve, Michael, Wolseley Park, Callander
1857 Grieve, Robert, Glenfalloch, Crianlarich
1869 Hamilton, J. B. B., of Arnprior, Callander
1846 Hamilton, J. B., of Leny, Callander
1873 Hart, Wm., Nether Garvock, Dunning
1889 Holmes, James, Auchinteck, Dunblane
1884 Johnston, J. S , Fintalich, Muthill
1873 Kinross, Andrew, Hungryhill, Dunblane
1861 Kirk, James, Kaimknow, Muckhart
1882 M‘Ara, Alex., Culdees, Muthill
1887 M‘Callum, Wm. R., Ballig, Crieff
1858 M‘Diarmid, D. A., Rockwood, Killin
1896 M‘Diarmid, James, Morenish, Killin
1881 Macdonald, John M. S., of Monachyle, Lochearnhead
1893 M‘Dougall, John, jun., Benglass, Crianlarich
1890 MacEwen, Daniel, Merchant, Callander
1888 M‘Ewen, John, Cambushinnie, Dunblane
1894 M‘Ewen, John, Land-Steward, Thornhill, Muthill
1891 Macfarlane, Charles, East Brackland, Callander
1896 Macfarlane, Duncan, V.S., Doune
1865 M‘Innes, Duncan, Milton Cottage, Crieff
1893 Mackay, John, Brucehill of Cardross, Port of Monteith
1881 Mackie, Peter, East Kirkton, Auchterarder
1872 Maclachlan, James, Doune Lodge, Doune
1896 M‘Laren, A., Dall, Ardeonaig, Killin
1859 M‘Laren, J., Brae of Monzievaird, Crieff
1888 M‘Laren, W. D., Drummore, Blairdrummond
1861 MacLean, Duncan, Belnollo, Crieff
1873 M‘Murrich, Peter, Glen Allan, Dunblane
1873 M‘Nab, John, M‘Nab House, Callander
1871 M‘Naughton, John, Inverlochlairg, Balquhidder
1879 M‘Naughton, Robert, of Cowden, Comrie
1857 M‘Niven, A., Innishewan, Killin

Admitted
1871 M'Rosty, James, Solicitor, Crieff
1872 Marshall, W. H., of Callander (25 Heriot Row, Edinburgh)
1879 Menzies, James, Finlarig, Killin
1853 Millar, Hew, Newstead, Crieff
1879 MORAY, Earl of, Doune Lodge, Doune
1882 Morries-Stirling, J. M., Gogar House, Stirling
1882 Moubray, John James, of Naemoor, Dollar
1875 Murdoch, George Burn, Gartincaber, Doune—*Free Life Member*
1853 Murdoch, John Burn, of Doune
1880 Murray, Anthony G., of Dollerie, Crieff
1879 Murray, David, Rossearn, Comrie
1873 Murray, John, Munnieston, Thornhill, Stirling
1862 MURRAY, Sir Patrick Keith, of Ochtertyre, Bart., Crieff
1894 Newbigging, Alex., of Dalchonzie, Comrie
1852 Nimmo, Matthew, Baad, Stirling
1892 Pagan, John S., Braendam, Thornhill, Perthshire
1882 Paterson, John, Kirkton, Tyndrum
1890 Paterson, Robert, Burnbank. Stirling
1892 Paterson, Robert, Hill of Drip, Stirling
1893 Paton, Robt., West Drip, Stirling
1864 Reid, Walter, Craigarnhall, Bridge of Allan
1861 Robertson, David, Allan Hill House, Dunblane
1864 Robertson, D. G., of Torrie, Callander
1896 Rogerson, James P., Tirarthur, Killin
1857 ROLLO, Lord, Duncrub House, Dunning
1883 ROLLO, The Hon. The Master of
1871 Ross, James E., Abercairny, Crieff
1890 Sharp, George R., Bardrill, Blackford
1881 Sharp, Jas. R., Viewfield, Blackford
1883 Sharp, John, South Forr, Crieff
1882 Sheppard, Rev. H. A. G., of Rednock, Port of Monteith
1895 Smeaton, T. W. Burgh, Easter Coull, Auchterarder
1870 Speir, R. T. A., Culdees Castle, Muthill
1875 Stark, M. C., Westerton Farm, Doune
1877 Stewart, Duncan, Callander
1881 Stewart, Duncan, Monachyle, Callander
1888 Stewart, Col. John, of Ardvoirlich, R.A., Lochearnhead
1895 Stewart, John, Bochastle, Callander
1882 Stewart, Joseph, Crianlarich, Stirling
1873 Stewart, Robert, Broom, Auchterarder
1889 Stirling, Archd., of Keir, Dunblane
1889 Stirling, James, Whiteston, Braco
1879 Stirling, Col. Patrick, of Kippendavie, Dunblane
1889 Tress, George Russell, Callander
1882 Wallace, John, of Glassengall, Dunblane
1885 Watters, Thomas, Glenample, Lochearnhead
1861 Williamson, Col. D. R., of Lawers, Crieff
1896 Willison, James, Acharn, Killin
1864 Wilson, Alex., Alford House, Dunblane
1875 Wilson, John, Lecropt, Bridge of Allan
1896 Young, David, Kintocher, Fowlis Wester, Crieff
1876 Young, Wm. S., Keir Mains, Dunblane

STIRLING.

1864 Aitken, John G., Southfield, Stirling
1878 Aitkenhead, Wm., Roughlands, Carron
1875 Baird, Hugh, Auchenbowie House, Bannockburn
1876 Best, John, Inveravon, Polmont
1877 Binnie, Thomas, Auction Mart, Falkirk
1882 Blair, Robert, Inversnaid Hotel, Loch Lomond

Admitted
1886 Bolton, Edwin, West Plean, Bannockburn
1858 Bolton, J. C., of Carbrook, Larbert
1888 Brown, Charles, Kerse Estate Office, Falkirk
1882 Brown, John, Brownville, Kilsyth
1882 Brown, John A. H., of Quarter, Dunipace
1897 Buchan, Robt., Dalgrain, Grangemouth
1897 Buchanan, Andrew C., Whitehouse, Stirling
1877 Buchanan, D. M. B., of Boquhan, Killearn
1877 Buchanan, John, Gartness, Killearn
1876 Buchanan, Robert, Blairquosh, Strathblane
1876 Buchanan, Robert, Letter Farm, Killearn
1869 Bulloch, Archibald, Milliken, Maryhill
1882 Buntine, J. R., Sheriff-Subt., Stirling
1891 Cairns, William, Balquharn, Menstrie
1882 Campbell, Capt. Henry J. Fletcher, R.N., Boquhan, Kippen, Stirling
1873 Christie, James, Coxethill, St Ninians
1894 Clarkson, John, of Toravon, Linlithgow
1882 Couper, James, Craigforth, Stirling
1857 Dalgleish, John J., Brankston Grange, Bogside Station, Stirling
1894 Dempster, John, Logie Cottage, Airthrey, Bridge of Allan
1864 Dewar, A., Arnprior, Port of Monteith
1864 Dewar, Peter, King's Park, Stirling
1894 Dick, James, Ballinton, Kippen Station
1864 Douie, J. R. L., 10 Drummond Place, Stirling
1890 Drummond, James W., Seed and Nursery Establishment, Stirling
1891 Drysdale, John, Fairfield, Kippen
1875 Duncan, A. R., Rosemount, Montrose
1885 Duncan, J. Dalrymple, Meiklewood, Stirling
1869 Edmond, David, of Ballochruin, Balfron
1881 Edmond, John, Galamuir, Bannockburn
1889 EDMONSTONE, Sir Archd., of Duntreath, Bart., Colzium, Kilsyth
1862 Erskine, H. D., of Cardross, Stirling
1882 Ewing, A. E. Orr, of Ballikinrain, Killearn
1897 Finlayson, Wm., Throsk, Stirling
1890 Fisher, Daniel, Ballamenach, Bucklyvie
1864 Fleming, James, Carmuirs, Falkirk
1860†Forbes, William, of Callendar, Falkirk
1893 Fotheringham, Robt., Southfield, Kippen Station
1888 Fraser, John, Balfunning, Drymen
1892 Fraser, William L., of Arngibbon, Adelphi Factory, Govan St., Glasgow
1880 Galbraith, J., Croy Cunningham, New Killearn Station
1873 Galbraith, T. L., Town-Clerk, Stirling
1897 Gillespie, W. W., Kersie Bank, South Alloa
1894 Graham, Donald, of Airthrey, Bridge of Allan
1894 Graham, Donald N., Airthrey Castle, Bridge of Allan
1894 Graham, Jas. D., Airthrey Castle, Bridge of Allan
1873 Gray, Andrew, West Plean, Bannockburn
1873 Gray, James, Kersie Mains, Stirling
1891 Gray, James, jun., Birkenwood, Gargunnock
1897 Grigor, John, Factor, Sauchie Burn, Stirling
1872 Guild, And., Rhoders, Alva
1881 Hamilton, Alex., Commercial Bank, Stirling
1859 Hamilton, W. F., The Elms, Lauriston, Falkirk

Admitted	
1868	Hamilton, C. H., of Dunmore Park, Larbert
1858	Hannay, John, of Cairnhill, Stirling
1878	Hay, James S., Clydesdale Bank, Falkirk
1873	Henderson, A. W., Bridge of Allan
1877	Henderson, William, of Redford, Linlithgow
1891	Inglis, Robt., Patrickstone, Gargunnock
1881	Jaffray, William, Broomridge, St Ninians
1877	Jardine, Wm., Bogside, Fintry
1884	Kay, Andrew, Little Kerse, Kippen
1875	Kay, Charles, Mill Farm, Gargunnock
1881	Kay, Robert, Mains Farm, Gargunnock
1878	Ker, T. Ripley, of Dougalston, Milngavie
1868	King, C. M., Antermony House, Milton of Campsie
1857	KING, Sir James, of Campsie, Bart., Bothwell Castle, Bothwell
1894	Kinross, Henry (James Gray & Co., Seedsmen), Stirling
1897	Lander, Thomas Eaton, Arngomery, Kippen
1864	Lang, John, Beild, Gargunnock
1869	Learmonth, T. L., of Park Hall, Polmont
1884	Learmonth, Wm., Bowhouse, Grangemouth
1891	Lowe, P. R., Fernfield, Bridge of Allan
1885	Luke, John, Headswood, Denny
1873	M'Alpine, James, Springfield, Stirling
1873	M'Caull, Peter, Knockhill, Bridge of Allan
1857	M'Farlan, Lieut.-Col. John W., of Ballencleroch, Campsie Glen
1894	M'Farlan, Parlan, Shore Wharf, Stirling
1891	Macfarlane, James, Oxhill, Bucklyvie
1891	Macfarlane, Parlane, Darnley House, Queen's Road, Stirling
1886	Macfarlane, Robert C., West Carse, Stirling
1864	M'Indoe, Lochbank House, Lennoxtown
1882	Mackay, John, Eagleton, Bridge of Allan
1891	M'Keich, William, Woodend, Bucklyvie
1889	Mackenzie, Robert, yr. of Caldarvan, Westerton, Bridge of Allan
1891	M'Kerracher, Daniel, Raploch, Stirling
1873	M'Lachlan, Archibald, 32 Queen Street, Stirling
1887	M'Laren, D., Cornton, Bridge of Allan
1891	M'Laren, James, Bandeath, Stirling
1885	M'Laren, J. T., Factor, Polmaise, Stirling
1867	MAITLAND, Sir James, of Barnton, Bart., Sauchie Burn, Stirling
1880	Malcolm, W. T., Dunmore, Airth Station, Stirling
1882	Melville, John H., Eriden, Falkirk
1890	Mitchell, David, Millfield, Polmont
1891	Mitchell, William, Blackdub, Stirling
1890	Moir, Alastair E. Graham, of Leckie, Gargunnock
1881	Moir, Alex., Nether Carse, Gargunnock
1876*†	MONTROSE, The Duke of, Buchanan Castle, Drymen
1876	More, John, Fordhead, Kippen
1873	Morrison, James M., Banker, Stirling
1880	Morton, David, 1 Pitt Terrace, Stirling
1861†	Murray, James, Catter House, Drymen
1890	Murray, J. Campbell, Blairquhosh, Strathblane
1863	Murray, Lieut.-Col. John, of Polmaise, Stirling
1895	Murray, W. Watson, Catter House, Drymen
1873	Nimmo, Alex., of West Bank, Falkirk
1873	Paton, John, of Viewforth, Stirling
1873	Patrick, James, Queenzieburn, Kilsyth
1895	Peareth, John Lennox, Lennox Castle, Campsie Glen, Stirlingshire
1889	Peat, John, Manor, Blairlogie, Stirling
1864	Philp, Robert, Royal Hotel, Bridge of Allan
1881	Pollock, J. J., of Auchineden, Strathblane
1891	Provan, John, Drum of Kinnaird, Larbert
1887	Pullar, Edmund, Coneyhill House, Bridge of Allan
1883	Rankin, Robert, Inchterf, Kirkintilloch
1868	Rankine, R. W., Rosebank, Falkirk
1891	Rawding, George, Bridgehaugh, Stirling
1882	Rennie, James, Corrie, Kilsyth
1882	Risk, James, Drumbrae, Bridge of Allan
1852	Ritchie, Wm., West Plean, Stirling
1855	Robertson, John, Benview, Falkirk
1878	Sands, James, Greenfoot, Gargunnock
1881	Scott, Rev. John, Camelon Manse, Falkirk
1884	Scott, Thomas, South Woodend, Bonnybridge
1872	Scoular, John, Crook, Stirling
1881	Slessor, Rev. Alexander, The Manse, Balfron
1857	Smith, Adam, Lochlands, Larbert
1893	Smith, James Kemp (Messrs Kemp & Nicholson), Stirling
1864	Smith, Robert, of Brentham Park, Stirling
1889	Speedie, John C., Rockdale, Stirling
1881	STEUART, Sir Alan H. Seton, of Touch, Bart., Stirling
1882	Stevenson, John, Gateside, Denny
1879	Stewart, M. H. Shaw, of Carnock, M.P., Larbert
1868	STIRLING, Sir C. E. F., of Glorat, Bart., Milton of Campsie
1857	Stirling, Major G., of Craigbarnet, Lennoxtown
1867	Stirling, James, of Garden, Kippen
1865	Stirling, Col. John S., of Gargunnock, Stirling
1881	Stirling, Robert, Pendreich, Bridge of Allan
1873	Taylor, James, Buchanan, Drymen
1890	Taylor, R., Craighead, Blairdrummond, Stirling
1877	Taylor, Robert, Solicitor, Stirling
1879	Thomson, James, Coach Works, Stirling
1897	Thomson, Robt, Queenshaugh, Stirling
1873	Thomson, William, Nyaad, Stirling
1881	Turnbull, James, Carnock Smithy, Larbert
1875	Ure, George, Wheatlands, Bonnybridge
1875	Ure, George R., Hope Park, Bonnybridge
1874	Ure, William, Bogton, Larbert
1873	Walls, Robert, Kerse Mills, Stirling
1890	Waters, J. C. Dun, of Craigton, Balfron
1877	Watson, John, Skipperton, Denny
1871	Waugh, Allan, Avonbridge, Falkirk
1864	Wilson, Alexander, Bannockburn House, Bannockburn
1881	Wilson, David, jun., of Carbeth, Killearn
1864	Wilson, E. L., Bannockburn
1859	Wilson, John, of Auchineck, Killearn
1896	Wilson, John E., Burnside, Alva
1881	Wilson, William, Bannockburn House, Bannockburn
1891	Wilson, William Ralph, Hill Park, Bannockburn
1891	Yellowlees, Robert, Victoria Square, Stirling
1867	Young, Andrew, 4 Clarendon Place, Stirling
1873	Young, William, Taylorton, Stirling
1896	Yuille, Andrew B., of Darleith, Bellevue, Bridge of Allan

4.—EDINBURGH DISTRICT.

EMBRACING THE

COUNTIES OF EDINBURGH, HADDINGTON, AND LINLITHGOW.

EDINBURGH.

Admitted
1878 Adam, Robert, 2 Gilsland Road, Edinburgh
1859 Ainslie, David, of Costerton, Blackshiels
1848 Ainslie, John, 2 Greenbank Terrace
1865 Aitchison, Lieut.-Col., of Drummore, Musselburgh
1877 Aitken, Dr A. P., 8 Clyde Street
1854 Aitken, James, Fairhaven, Eskbank
1854 Aitken, T., 11 Hope Street, Portobello
1860 Aitken, T., 5 Grosvenor Crescent
1889 Alexander, A., 34 St Andrew Square
1878 Allan, John, 22 St Albans Road
1892 Allan, Thomas, Clifton, Mid-Calder
1893 Allison, James, Claylands, Ratho
1881 Amour, John, Cramond Bridge
1877 Anderson, Charles, 377 High Street
1884 Anderson, J. R., W.S., 52 Palmerston Place
1884 Anderson, R. K., 377 High Street
1881 Anderson, W. M., Belmont, Dalkeith
1873 Andrew, Robert, 83 Haymarket Terrace
1855 Archbald, T., of Viewbank, Lasswade
1876 Archbald, T. B., 36 Craigmillar Park
1869 Archibald, James, Overshiels, Stow
1869 Archibald, John, Overshiels, Stow
1887 Armstrong, W. J., 57 Manor Place
1877 Auld, Peter, 21 Millerfield Place
1894 Babington, William, 81A George Street
1893 Bailey, Col. F., Professor of Forestry, Edinburgh University, 7 Drummond Place
1894 Baird, Archibald, M.R.C.V.S., 40 York Place
1876 Baird, Colin C., V.S., Clyde Street
1879 Balfour, Professor I. B., Inverleith House
1801 Bathgate, James, Middleton Lime Works, Gorebridge
1875 Bayley, George, 7 Randolph Crescent
1882 Belfrage, A. J., Durham House, Portobello
1871 Belfrage, A. W., C.E., 1 Erskine Place
1840 Belfrage, J., 40 Craigmillar Park
1895 Bell, David, 6 Bank Street, Leith
1805 Bernard, John Mackay, 25 Chester St.
1877 Bertram, D. N., St Katherine's Works, Sciennes
1891 Black, A. D. M., W.S., 28 Castle Street
1862 Blackwood, William, 45 George Street
1874 Blair, John, W.S., 9 Ettrick Road
1879 Blair, Patrick, W.S., 19 Ainslie Place
1861 Blues, Andrew A., 8 North Mansion House Road
1846 Borthwick, John, of Crookston, Heriot
1857 Brockley, Robert M., Gourlaw, Rosewell
1848 Brodie, James C., 6 Dean Terrace
1890 Brodie, William Alex. G., 15 Rutland Square
1877 Brown, James, Spittal, Penicuik

Admitted
1881 Brown, Richard, C.A., 23 St Andrew Square
1892 Brown, Robert, Orniston Villa, Kirknewton
1882 Brown, Wm., Currievale, Currie
1877 Bruce, E., 26 Greenside Place
1885 Brunton, Wm., 4 Bernard Street, Leith
1878 Bryce, And., Craigentinny, Edinburgh
1894 Bryden, Robert, 55 George Street
1853*†BUCCLEUCH and QUEENSBERRY, The Duke of, K.T., Dalkeith House, Dalkeith
1880 Buchan, Alex., LL.D., 42 Heriot Row
1882 Buchanan, Ben., Springbank, Corstorphine
1802 Buchanan, Charles, Land Steward, Penicuik
1872 Buchanan, John, C.E., 24 George Street
1804 Buchanan, Robert, Livingston Mill, Livingston, Mid-Calder
1884 Burn, C. M. P., Prestonfield House, Edinburgh
1896 Burness, C., 2 Lennox Street
1877 Burnett, A. E., 37 Drummond Place
1838 Burnley, W. F., 24 Ainslie Place
1867 Burton, J. Tait, of Toxside, Gorebridge
1884 Byres, Wm., Baadsmill, West Calder
1878 Caird, Alex. M'Neel, 35 Howard Place
1887 Cairns, Wm., Dairyman, Fountainbridge
1887 Callander, Henry, of Preston Hall, Dalkeith
1876 CAMPBELL, Sir Archd. S. L., of Succoth, Bart., 23 Moray Place
1889 Campbell, Arthur, 4 Randolph Crescent
1889 Campbell, George, W.S., 51 Castle Street
1895 Campbell, James, Illieston, Mid-Calder
1895 Campbell, John, Solicitor, 27 Dundas Street
1890 Campbell, P. W., W.S., 1 North Charlotte Street
1887 Campbell, W. G., 22 Lynedoch Place
1889 Carfrae, Geo., C.E., 1 Erskine Place
1809 Carphin, James R., C.A., 14 Hanover Street
1893 Charters, John (Drummond Brothers), 17 Greenside Place
1887 Chiene, Prof., 26 Charlotte Square
1862 Christie, C. J., 6 Glenorchy Terrace
1884 Christie, Wm., Braemar, Whitehouse Terrace
1855 Church, D. M., 27 Minto Street
1895 Clay, Alexander Thomson, W.S., 24 Charlotte Square
1854 Clay, John, 8 Magdala Crescent
1883 Cleghorn, Thomas, Craigour, Liberton
1876 CLERK, Sir George Douglas, of Penicuik, Bart.
1894 Connell, Isaac, Secretary, Chamber of Agriculture, 52 Hanover Street
1884 Cook, Charles, W.S., 61 Castle Street
1882 Cook, Henry, W.S., 61 Castle Street

Admitted
1892 Cook, James, Arniston, Gorebridge
1885 Cook, Wm. Home, C.A., 42 Castle Street
1865 Cousin, George, 140 Princes Street
1860 Cowan, C. W., of Logan House, Penicuik
1872 Cowan, George, Valleyfield, Penicuik
1858 COWAN, Sir John, of Beeslack, Milton Bridge
1879 Cowan, John, W.S., 12 Hill Street
1879 Cowan, John, 13 South St Andrew St.
1893 Cox, Chas. T., W.S., 9 Buckingham Ter.
1892 Cox, Robert, of Gorgie, M.P., 34 Drumsheugh Gardens
1896 Crabbie, George, of Blairhoyle, 56 Palmerston Place
1877 Crabbie, John M., 33 Chester Street
1863†CRAIG, Sir J. H. Gibson, of Riccarton, Bart., Currie
1877 Craig, Dr William, 71 Bruntsfield Place
1894 Crichton, David, 89 Princes Street
1849 Crichton, Hew Hamilton, W.S., 13 Nelson Street
1894 Crichton, Wm., Parduvine, Gorebridge
1875 Croall, Robt., Craigcrook Castle, Blackhall
1858 Crombie, Alex., University Club, Princes Street
1883 Cross, Adam P., Bowling Green Street, Leith
1880 Cross, Alexander, 13 Drummond Place
1870 Cunningham, C., V.S., Slateford
1888 Cunningham, Geo. M., C.E., 135 George Street
1894 Cunningham, Lawrence, Thornbank, Juniper Green
1877 CUNYNGHAM, Sir R. K. A. Dick, of Prestonfield, Bart.
1867 Curror, David, 25 Northumberland St.
1873 Curror, P. R., Myreside, Edinburgh
1875 Dalgleish, Geo., Rosebery Mains, Gorebridge
1858 Dalgleish, L., 1 Rutland Square
1882 Dallas, D. F., S.S.C., 27 Charlotte Square
1862 DALRYMPLE, Sir Charles, of New Hailes, Bart., M.P., Musselburgh
1873 Dalziel, George, W.S., 66 Queen Street
1888 Dalziel, William, Muirhousedyke, West Calder
1896 Darling, Hon. Lord Stormonth, 10 Great Stuart Street
1877 Davidson, James I., Saughton Mains, Gorgie
1850 Davidson, W. J., 32 Drumsheugh Gardens
1888 Davidson, W. S., 54 Castle Street
1896 Deans, John H., 62 Great King Street
1877 Dewar, James Cumming, of Vogrie, Ford
1883 Dewar, John R. W., V.S., Dick Veterinary College, 8 Clyde Street
1893 Dick, Thomas, Wester Causewayend, Kirknewton
1884 Dickson, James, Damhead, Loanhead
1879 Dickson, T. G., 3 North St David Street
1878 Dickson, W. T., W.S., 11 Hill Street
1866 Dobbie, John, Campend, Dalkeith
1889 Dods, Archibald, Halflawkiln, Gorebridge
1884 Douglas, James, Cousland, Dalkeith
1894 Douglas, James Henry, Whitehill, Rosewell
1858 Dowell, Alex., 13 Palmerston Place
1869 Downie, Hay, Corstorphine
1894 DRUMMOND, Sir James H. Williams, of Hawthornden, Bart., Lasswade
1880 Dun, Finlay, 130 George Street
1884 Duncan, Peter, Eskbank, Dalkeith
1848 Duncan, William, S.S.C., 13 Abercromby Place
1876 Duncan, William, S.S.C., 18 York Place
1887 Dundas, David, Advocate, 7 St Colme Street

Admitted
1893 Dundas, Capt. Robert, yr. of Arniston, Gorebridge
1878 Dundas, Ralph, W.S., 16 St Andrew Sq.
1847 Dundas, Robert, of Arniston, Gorebridge
1880 Dundas, William J., C.S., 16 St Andrew Square
1872 Dunlop, George, W.S., 20 Castle Street
1877 Dunn, Malcolm, The Gardens, Dalkeith
1858 Durie, David, 1 Queensferry Gardens
1878 Dykes, James, Cuicken, Penicuik
1874 Edgar, John, Kirkettle, Roslin
1877 Elder, James, Rodinglaw, Currie
1892 Elder, Samuel, Whitehill Mains, Musselburgh
1867 Elphinstone, Hon. E. B., Inveresk Lodge, Musselburgh
1876 Ferguson, Archd. A., 196 High Street, Portobello
1863 Ferguson, John, Burghlee, Loanhead
1875 Fernie, James A., Smeaton, Dalkeith
1896 Findlay, John Ritchie, of Aberlour, 3 Rothesay Terrace
1869 Finlay, John H., W.S., Register House
1890 Fisher, Thomas, Whitehill, Rosewell
1895 Fleming, C. J. N., Fettes College
1864 Fleming, James Nicol, 12 George Square
1882 Fleming, Jas. S., 16 Grosvenor Crescent
1893 Fleming, John, Coates, Penicuik
1875 Fletcher, John D., 6 Barnton Terrace, Blackhall
1878 Ford, G., Saughton Hall Mains, Murrayfield
1893 Ford, Jas., Saughton Hall Mains, Gorgie
1871 Forgan, Andrew, 10 Claremont Terrace
1877 Foulis, David, 61 George Street
1868 Fraser, Alex., Canonmills Lodge
1894 Gardner, Adam, Melville Grange, Liberton
1855 Gardner, R., 12 Claremont Terrace
1877 Gardner, William, East Langton, Mid-Calder
1886 Garson, Wm., W.S., 5 Albyn Place
1887 Geddes, G. H., 21 Young Street
1892 Gibson, A. H., 5 Crawford Road—*Free Life Member*
1893 Gibson, George, Brunstane Mills, Musselburgh
1886 Gibson, Rev. John, 22 Regent Terrace
1895 Gibson, Thomas R., Bainfield Iron Works, Fountainbridge
1847 GILLESPIE, Sir John, W.S., 53 Northumberland Street
1890 Gilmour, R. Wolridge Gordon, of Craigmillar
1896 Glendinning, George E., Hatton Mains, Kirknewton
1869 Glendinning, G. R., Hatton Mains, Kirknewton
1874 Glendinning, J. P., Overshiels, Mid-Calder
1890 Glendinning, Patrick B., Hatton Mains, Kirknewton
1865 Goldie, R. G. M., 3 Comely Green Place
1893 Gordon, A. A., 34 Nile Grove
1893 Graham, David, Leyden, Kirknewton
1861 Gray, James, Braehead Mains, Cramond Bridge
1884 Gray, James, Harperigg, Kirknewton
1878 Gray, Robert Smith, Southfield, Duddingston
1877 Greig, R. M., Fountainbridge
1889 Grey, John Edward, 20 Lauriston Place
1893 Guild, Alexander, Greenhead, Pencaitland (2 Thistle Court)
1877 Gulland, W. J., Monkton Hall, Musselburgh
1869 Hagart, J. V., W.S., 140 Princes Street
1864 Halkett, Lieut.-Col. J. C., of Cramond
1873 Hamilton, Robert, 18 Waterloo Place
1864 Hamilton, Wm., of Cairns, Kirknewton

Admitted
1843 Handyside, W., 21 Magdala Crescent
1884 Harper, James, Fordel, Dalkeith
1871 Harper, William, Sheriffhall Mains, Dalkeith
1893 Harwell, John Hood, Whitemoss, Kirknewton
1862 Hay, James, 9 Castle Street
1893 Hay, Robert, Bailie, Huntly Street, Canonmills
1893 Henderson, Allan M., 4 Charlotte Place
1863 Henderson, Jas., Walton, Corstorphine
1876 Henderson, John, C.A., 40 Leamington Terrace
1862 Hendrie, John, 7 Murrayfield Avenue
1863 Higgins, Robert, 4 Garscube Terrace, Murrayfield
1863 Hogg, Henry, Symington Mains, Stow
1876 Hogg, Robert, 18 Ann Street
1859 Hogg, Robert, Rosemay, Leadburn
1880 Hogg, Thos., Oxenford Mains, Dalkeith
1858 Hood, Archibald, Rosewell
1878 Hope, Alex., Kingston Grange, Liberton
1848 Hope, Jas., of Belmont, Murrayfield
1877 Hope, James Edward, New Club
1864 Howe, Alex., W.S., 32 Charlotte Square
1887 Howie, Archibald, Rosebery, Gorebridge
1877 Hunter, J., jun., Woodhall Mains, Juniper Green
1894 Hunter, John, 29 Chambers Street
1875 Hunter, John, c/o Hunter & Son, Corn Millers
1853 Hunter, Wm. B., Aracan Cottage, Musselburgh
1872 Hutchison, J. T., 12 Douglas Crescent
1875 Hutchison, Thos., Broomhills, Loanhead
1877 Inch, Robert, 1 Victoria Street
1869 Inglis, A. W., 30 Abercromby Place
1884 Inglis, H. H., W.S., 8 North St David St.
1887 Innes, John C., W.S., 32 Queen Street
1872 Jack, Gavin, Swanston, Lothianburn
1860 Jack, Samuel, Crichton Mains, Dalkeith
1869 Jack, Thomas, Hermiston, Currie
1885 Jameson, Andrew, 14 Moray Place
1860 Jamieson, G. A., C.A., 24 St Andrew Sq.
1874 Jamieson, J. A., W.S., 66 Queen Street
1858 Jamieson, Wm. H., Thornlie Villa, Loanhead
1869 Jeffrey, David, 14 Randolph Crescent
1880 Jenkinson, A. D., 10 Princes Street
1872 Johnson, W. H., Tweed Villa, Relugas Road
1852 Johnston, Alex., Hailes, Slateford
1894 Johnston, Henry, Advocate, 33 Moray Pl.
1862 Jones, Charles Digby, 12 Chester Street
1868 Kay, Wm., Broomieknowe, Lasswade
1898 Keith, Davidson, 65 George Street
1894 Kennaway, David, Polton Farm, Lasswade
1860 Kennaway, Robt., 10 Middleby Street
1888 Kerr, George, 9 Great Stuart Street
1889 Kerr, Thomas, W.S., 16 Hill Street
1875 Kidston, Richard, 11 Belgrave Crescent
1872 King, James, West Mills, Colinton
1871 King, J. F., Chambers Street
1876 Kinnear, C. G. H., 12 Grosvenor Cres.
1897 Kirk, W. J., 40 Palmerston Place
1896 Kirkwood, W. H., Lothian Bridge, Dalkeith
1896 Laidlay, Alfred Hope, 4 Eglinton Cres.
1877 Laing, Alex., S.S.C., 59 Manor Place
1874 Laing, William, 13 Easter Road, Leith
1893 Laird, Robert, 17 Frederick Street
1884 Lamond, Robert, Malcolmstone, Currie
1895 Lamont, James, 9 Howe Street
1877 Laurence, P., 50 Frederick Street
1872 Lawrie, John W., Stow
1872 Lawrie, Thos., Esperston, Gorebridge
1878 Lee, A. H., 58 Manor Place
1863 Lee, John, 16 St Albans Road
1878 Lindsay, Hugh, 13 Gladstone Pl., Leith

Admitted
1884 Lindsay, Robert, Windsor House, Ferry Road
1889 Lindsay, W. P., W.S., 16 Queen Street
1866 Lockhart, R., jun., 20 Polwarth Terrace
1884 Logan, C. B., W.S., 28 Queen Street
1872 Loney, Peter, 22 George Square—*Free Life Member*, 1892
1874 Lothian, M. J., Redwood, Spylaw Road
1891 Lowe, W. D., W.S., 66 Queen Street
1889 Lowson, James G. F., Polton, Mid-Lothian
1872 Lyal, William, 7 Comiston Gardens
1859 Macadam, Dr S., Surgeons' Hall
1884 Macadam, Prof. W. Ivison, Surgeons' Hall
1874 McCallum, A. I., 19 Grassmarket
1864 M'Candlish, John M., 27 Drumsheugh Gardens
1869 M'Culloch, R. C., 15 Brougham Street
1883 Macdonald, James, 3 George IV. Bridge —*Secretary of the Society*
1886 Macdonald, R. B., Granton Mains, Edin.
1875 M'Dougal, Thos., Eskvale, Penicuik
1882 MacDougall, J. Patten, 39 Heriot Row
1870 M'Dowall, Andrew, Harelaw, Currie
1878 M'Dowall, T. N., Remote, Dalkeith
1862 Macfie, C., of Gogarburn, Corstorphine
1865 Macfie, D. J., of Borthwick Hall, Heriot
1893 Macfie, J. W., of Dreghorn, Colinton
1896 Macfie, R. A., Dreghorn, Colinton
1869 Macfie, Wm., of Clermiston, Corstorphine
1877 M'Gowan, Robert, 46 Fountainhall Road
1870 M'Gowan, William, 46 Fountainhall Rd.
1895 M'Harrie, Stair, Oxenford, Dalkeith
1884 Mackay, W. B., 17 Lennox Street
1869 Mackenzie, A. K., of Ravelrig, 19 Grosvenor Crescent
1879 Mackenzie, A. D., 6 Hartington Gardens
1884 Mackenzie, D. F., Morton Hall, Liberton
1848 Mackenzie, John, New Club
1879 Mackenzie, John, W.S., 16 Royal Circus
1848 Mackenzie, J. Ord, W.S., 9 Hill Street
1892 M'Kinnon, George, Melville Castle, Lasswade
1896 Mackinnon, William, 144 Princes Street
1892 Maclagan, Philip R. D., St Catherine's, Liberton
1853 MACLAGAN, Prof. Sir Douglas, 28 Heriot Row
1873 Maclagan, R. C., M.D., 5 Coates Crescent
1896 M'Laren, J. D. M., c/o D. M'Laren & Co., Leith
1894 M'Leod, A. G., 4 Great King Street
1893 Macmillan, John, Corstorphine Hill House
1883 Macpherson, C. E. W., C.A., 77 George Street
1856 Macpherson, John, 9 Forres Street
1896 Main, James, Corn Exchange Buildings
1877 Mark, Robert, Valleyfield Street
1880 Marshall, Rev. Theodore, 19 Coates Gardens
1874 Martin, J., 38 Lauriston Place
1890 Martin, J. C., c/o S. Greig, 55 Frederick Street
1886 Massie, W. H., 1 Waterloo Place
1875 Mather, Edward, The Lee, Edinburgh
1871 Matheson, Kenneth, 58 Morningside Drive
1869 Melrose, Patrick, Tower House, Tower Street, Portobello
1894 MELVILLE, Viscount, Melville Castle, Lasswade
1849 Melvin, Jas., 43 Drumsheugh Gardens
1863 Menzies, D., C.E., 39 York Place
1871 Menzies, Robert, S.S.C., 23 York Place
1870 Menzies, Wm. J., W.S., 123 George Street
1870 Merricks, H. J., Hay Mains, Harburn, West Calder
1884 Methven, John, 6 Bellevue Crescent

Admitted
1892 Mettam, A. E., Veterinary College, 8 Clyde Street
1882 Mill, George, 44 Frederick Street
1883 Milne, Alex., 32 Hanover Street
1869 Mitchell, Wm., S.S.C., 11 South Charlotte Street
1892 Moffat, James, 48 Castle Street
1876 Moir, Peter, 74 Nicolson Street
1885 MONCREIFF, Hon. Jas. W., 6 Ainslie Pl.
1866 Moncrieff, D. S., W.S., 24 George Square
1884 Morton, Thomas, Redheugh, Gorebridge
1886 MORTON, The Earl of, Dalmahoy, Wilkieston
1887 Mungle, John T., West Calder
1891 Munro, Duncan, 3 Dalrymple Place—*Free Life Member*
1886 Munro, John C., yr. of Marchbank, Balerno
1880 Munro, William, of Marchbank, Balerno
1870 Mure, Wm. J., New Club, Princes Street
1881 Murray, Captain A. B., 11 Grosvenor St.
1880 Murray, Lieut.-Col., C. S., 143 Warrender Park Road
1877 Murray, The Right Hon. A. G., Q.C., M.P., Lord Advocate, 7 Rothesay Ter.
1875 Murray, R. W. E., Blackford House, Blackford Avenue—*Free Life Member*
1857 Murray, Thomas, Braidwood, Penicuik
1890 Murray, T. M., W.S., 12 Lennox Street
1885 Murray, Wm. Hugh, W.S., 48 Castle St.
1890 Mylne, James, W.S., 36 Castle Street
1888 Naismith, R. T., 2 Ethel Ter., Plewlands
1896 Nisbet, George, Joppa Pans, Portobello
1893 Nisbet, Robert, Kingsknowes, Slateford
1847 Nisbett, J. M., of Cairnhill, Drum, Edinburgh
1860 Niven, A. T., C.A., 16 Young Street
1862 Norie, H. H., Union Bank, Edinburgh
1883 Oliver, James, 1 London Street
1876 Ovens, William R., Leith
1874 Park, Ebenezer, Greenside Lane
1873 Park, J. D., Greenside Lane
1874 Park, William, Brunstane, Portobello
1889 Pate, Thomas, Windydoors, Stow
1864 Paterson, D. A., Merchant, Leith
1878 Paterson, James, of Bankton, Mid-Calder
1877 Paterson, John, Meadowspott, Dalkeith
1876 Paterson, J. T. S., 55 Grange Loan
1894 Paterson, John W., 14 Brunstane Road, Joppa—*Free Life Member*
1877 Paterson, Richard L., Meadowspott, Dalkeith
1869 Paterson, Thos., W.S., 31A George Street
1890 Patten, Hugh, W.S., 42 Castle Street
1880 Paul, George M., C.S., 16 St Andrew Sq.
1878 Pendreigh, George, Catcune, Gorebridge
1894 Penman, William, Assoc. M.I.C.E., Craigview, Marchhall Road
1893 Pitman, A. R. C., W.S., 48 Castle Street
1859 Plenderleith, Arch., Blackhope, Heriot
1894 Poole, Wm., Corn Exchange Buildings
1880 Pott, George, of Potburn, 55 Albany St.
1865 Prentice, R. R., 6 Mayfield Terrace
1863 Pringle, D., Torquhan, Stow
1876 Pringle, J., 5 Tipperlinn Road
1881 Ramsay, R. G. Wardlaw, of Whitehill (Tillicoultry House, Tillicoultry)
1890 Ramsay, William, of Bowland, Stow
1874 Rankine, Prof. John, 23 Ainslie Place
1887 Readman, J. B., 4 Lindsay Place
1893 Reid, James, W.S., Drem, East Lothian (2 Thistle Court)
1888 Renwick, Andrew, East Pilton, Edinburgh
1879 Renwick, Wm., Meadowfield, Corstorphine
1871 Richmond, Thomas, Conservative Club, Princes Street
1877 Riddell, A., 5 Grassmarket
1869 Ritchie, Charles, S.S.C., 20 Hill Street

Admitted
1877 Ritchie, D., 9 Gayfield Square
1865 Ritchie, W., of Middleton, Gorebridge
1853 Ritchie, W., Woolmet, Dalkeith
1896 Robertson, Andrew, Kensworth Lodge, Polwarth Terrace
1884 Robertson, J. A., C.A., 33 Charlotte Square
1876 Robertson, Lieut.-Col. James C., United Service Club
1889 ROBERTSON, Rt. Hon. J. P. B., Lord Justice-General, 19 Drumsheugh Gardens
1873 Rodgie, Henry, St Clement's Wells, Musselburgh, N.B.
1893 Ross, Alexander, Edinburgh Live Stock Mart
1886 Russell, A., Inchdrewer House, Colinton
1893 RUSSELL, Sir James Alex., Woodville, Canaan Lane
1851 Russell, James M., 11 Pitt Street, Portobello
1860 Rutherford, G., Monteath's Houses, Gorebridge
1887 Rutherford, Richard, V.S., Bread Street
1880 St Clair, J. S., Musselburgh
1864 Sanderson, Wm., Mount Lothian, Eskbank
1892 Sanford, Major Charles Henry, Beeslack, Milton Bridge
1854 Scoon, K., 46 Rankeillor Street
1875 Scott, Alex., 8 Bellfield, Portobello
1891 Scott, Rev. Arch., D.D., 16 Rothesay Place—*Chaplain to the Society*
1880 Scott, E. E., C.A., 64 Queen Street
1848 Seton, Geo., Conservative Club, Princes Street
1889 Shiells, James, Muirhouse, Stow
1896 Simpson, John, Outerston, Gorebridge
1878 Simpson, Thomas, Duddingston, Portobello
1874 Simson, C. S., 47 Queen Street
1869 Skinner, W., of Corra, W.S., 35 George Square
1846 Skirving, R. Scot, 29 Drummond Place
1886 Skirving, Thomas M., Niddrie Mains, Edinburgh
1889 Slimon, Robert, of Whitburgh, Ford, Dalkeith
1877 Smail, James, Commercial Bank, Edinburgh
1884 Smart, Alex., Bow, Stow
1880 Smart, J. C., 54 George Square
1893 Smith-Sligo, Archibald D. (of Inzievar and Carmyle), 5 Drummond Place
1881 Smith, A. D., C.A., 4 York Place
1872 Smith, Dr G. P., care of P. Ronaldson, C.A., 3A North St David Street
1895 Smith, Harry Wedderburn, W.S., 21A Duke Street
1878 Smith, J., 89 Grassmarket
1867 Smith, J. Turnbull, C.A., 5 Belgrave Place
1896 Smith, Stephen, 47 George Street
1884 Smith, Thomas H., National Bank, Edinburgh
1884 Smith, William, 1 Grassmarket
1893 Somner, George (Peter Lawson & Son, Limited), 1 George IV. Bridge
1854 Starforth, John, Architect, 37 York Pl.
1893 Stark, James, 26 Earl Grey Street
1895 Stedman, James, jun., Middletoun, Mid-Lothian
1870 Steel, Lieut.-Col. G. Mure, 33 Northumberland Street
1861 Stenhouse, Jas., Turnhouse, Cramond Bridge
1884 Steuart, J. H., Selms, Kirknewton
1893 Steuart, Thomas Elis, Stellknowe, Leadburn, and 48 Palmerston Place
1886 Stevenson, David Alan, C.E., 84 George Street

Admitted
1881 Stewart, G. M. F., 10 Oxford Terrace
1893 Stewart, James Robert Hunter, 4 Albyn Place
1894 Stewart, William, Dalhousie Castle, Bonnyrigg
1893 Stockman, Stewart, M.R.C.V.S., 8 Clyde Street
1878 Stodart, J. A., Broomvale, Broomieknowe, Lasswade
1851 Stodart, John, Calderwood Bank, Lasswade
1890 Stoddart, James Edward, of Howden, Mid-Calder
1878 Strathern, Robt., W.S., 12 South Charlotte Street
1865 Sutherland, Jas. B., S.S.C., 10 Windsor Street
1858 Swan, James, 47 Lauriston Place
1858 Swan, Thomas, 47 Lauriston Place
1889 Sydserff, John Buchan (Ruchlaw), National Bank, 142 Princes Street
1874 Syme, David, 1 George IV. Bridge
1876 Symington, Jas., 20 St Albans Road
1893 Taylor, J. Pringle, Dunsmure, Corstorphine
1893 Taylor, Jas. (Easter Drylaw), Bangholm House, Ferry Road, Edinburgh
1884 Taylor, Peter, Lochend
1872 Taylor, Thos., Seed Merchant, Dalkeith
1893 Tennent, David B. Clark, Cammo, Cramond Bridge
1879 Thiem, Albert M., Windsor Hotel, Princes Street
1884 Thin, John, Ferniehirst, Stow
1874 Thoms, George Hunter, 13 Charlotte Square
1867 Thomson, Charles W., C.A., 16 Lennox Street
1889 Thomson, George Munro, W.S., 123 George Street
1858 Thomson, James, 53 George Street
1895 Thomson, James, yr. of Glenpark, Balerno
1895 Thomson, James Wishart, of Glenpark, Balerno
1867 Thomson, John Comrie, 30 Moray Place
1870 Thomson, Lockhart, S.S.C., 114 George Street
1873 Thomson, Mitchell, 9 South St Andrew Street
1859 Thomson, Peter, Conservative Club, Princes Street
1888 Thomson, Robert, Rusha, West Calder
1893 Thomson, Robert Harvey, 26 Royal Terrace
1884 Thorburn, David, Brockhouse, Stow
1896 Thornton, Robert Hermand, West Calder
1893 Thyne, Kennard, Pentland Mains, Loanhead
1869 Tod, James C., Currie
1870 Tod, John W., W.S., 66 Queen Street
1876 Todd, David, 2 Dick Place
1865 Todd, Jas., 2 Morningside Gardens
1893 TORPHICHEN, Lord, Calder House, Mid-Calder
1871 Torrance, Archibald P., Viewfield, Lasswade
1877 Torrance, T. A., Camps, Wilkieston
1894 Torrance, T. A., Kipplelaw, Dalkeith
1876 Traill, Thomas, Inverleith Terrace
1846 Traquair, Ramsay H., Colinton
1865 Trotter, Coutts, 10 Randolph Crescent
1865 Trotter, Lieut.-Col. H., of Morton Hall, Liberton
1878 Tuke, Dr J. B., Saughton Hall
1896 Tullo, James, 2 Hanover Street
1874 Turnbull, David, W.S., 5 South Charlotte Street
1868 TURNER, Prof. Sir W., M.B., 6 Eton Terrace

Admitted
1893 Tytler, James Wm. Fraser-, Woodhouselee, Mid-Lothian
1896 Usher, Frank James, Norton, Ratho Station
1893 Usher, Frederick, Norton Mains, Ratho
1885 Usher, John, of Norton, Ratho
1864 Veitch, Chris., 11 Rothesay Place
1874 Waddell, A. Peddie, 6 Albyn Place
1888 Waddell, George, 4 St Andrew Square
1857 Wakelin, John, Oil Mills, Musselburgh
1877 Walcot, John, 13 Greenside Place
1870 Walker, Alexander, Stagebank, Heriot
1872 Walker, Alex. J., 5 Manor Place
1860 Walker, James, of Dalry, Hanley, Corstorphine
1882 Walker, R. H., of Hartwood, West Calder
1884 Walker, James, Limefield House, West Calder
1893 Wallace, John William, of Shoestanes (3 Bernard Street, Leith)
1878 Wallace, Prof. Robert, University, Edinburgh—*Free Life Member*
1882 Wallace, R. Hedger, c/o Taylor, 4 Panmure Place
1858 WARRENDER, Sir G., of Lochend, Bart., Bruntsfield House
1837 Waterston, Charles, 39 Albany Street
1869 Watherston, James, 29 Queensferry St.
1882 Watson, G. G., W.S., 32 Albany Street
1878 Watson, Jas. Graham, 22 Learmonth Ter.
1864 Watson, John, Kingsbeck, Cluny Drive
1884 Wauchope, Lieut.-Colonel A. S., of Niddrie Marischall, Liberton
1882 WAUCHOPE, Sir J. D. D., of Edmonstone, Bart., 12 Ainslie Place
1863 Webster, J., 12 Brunstane Road, Portobello
1884 Weir, W. C., Middleton, Gorebridge
1886 Welsh, W. M., 1 Waterloo Place
1877 Welwood, J. A. Maconochie, Meadowbank House, Kirknewton
1884 Wenley, James A., Bank of Scotland
1876 White, James, Stagehall, Stow
1872 White, Robert, Musselburgh
1893 White, Samuel, Lugate, Stow
1893 Whitson, George, 147 Gilmore Place
1884 Wight, Robert, Suffolk House, Suffolk Road
1884 Wilkie, Captain W., of Ormiston, Kirknewton
1873 Will, Robert W., S.S.C., 37 Queen Street
1867 Williams, W., Principal, New Veterinary College, Leith Walk
1881 Williams, W. O., New Veterinary College, Leith Walk
1870 Wilson, P., care of Lammie, 3 Summer Place
1858 Wilson, Richard, C.A., 28 Great King Street
1894 Wood, John Phillip, W.S., Professor of Conveyancing, University of Edinburgh
1875 Wylie, Alexander, W.S., 54 Queen St.
1890 Wylie, James, Royal Bank, 1 Leven St., Edinburgh
1884 Wyllie, Alex., 56 Great King Street
1854 YOUNG, Hon. Lord, 28 Moray Place
1888 Young, David, of the *North British Agriculturist*, 377 High Street
1893 Young, James (James Young & Sons), Bryson Road
1876 Young, John, St Margaret's, Wester Duddingston
1896 Young, John, Straiton, Loanhead
1889 Young, J. W., W.S., 22 Royal Circus
1887 Younger, George, 4 Douglas Gardens
1870 Younger, Henry J., Abbey Brewery
1863 Younger, Robert, 15 Carlton Terrace
1894 Younger, William, 29 Moray Place

HADDINGTON.

Admitted
1882 Ainslie, John, jun., Morham Mains, Haddington
1893 Amos, John, Alderston, Haddington
1859 Anderson, G. B., Meikle Pinkerton, Dunbar
1873 Anderson, W. W., of Kingston, North Berwick
1892 Baillie, Wm., Nurseries, Haddington—*Free Life Member*
1860 **Baird**, Sir David, of Newbyth, Bart., Prestonkirk
1877 Baird, J. W., Pilmore House, Pencaitland
1863 **Balfour**, Right Hon. A. J., of Whittinghame, M.P., Prestonkirk
1888 Bayley, Isaac F., Halls, Dunbar
1893 Bertram, Andrew, Townhead, Gifford
1859 Binnie, John, Birnieknowes, Cockburnspath
1893 Binnie, Robert J., Seton Mains, Longniddry
1892 Blair, Thomas, Hoprig Mains, Macmerry
1872 Brand, James, Dunbar
1880 Bridges, Andrew, Engineer, North Berwick
1868 Broadwood, T., Crowhill, Innerwick
1884 Calder, Robt., Cairndinnies, Haddington
1859 Clapperton, James, Garvald Mains, Prestonkirk
1864 Clark, James, Kirklandhill, Dunbar
1893 Clark, John, Wamphray, North Berwick
1880 Clark, Thomas, Oldhamstocks Mains, Cockburnspath
1896 Cockburn, David, Castleton, North Berwick
1889 Connor, G. A., Craigielaw, Longniddry
1897 Cook, Chas. W. L., Wester Pencaitland, Pencaitland
1886 Courtney, Wm., Portobello Farm, Tranent
1893 Cree, W., of Gifford Bank, Gifford
1891 Crosbie, Alexander, of Blegbie, Upper Keith
1883 Cunningham, St Clair, Hedderwick Hill, Dunbar
1895 Curr, William Simpson, Ninewar, Prestonkirk
1883 Darling, James, Priestlaw, Duns
1872 Dewar, David, Murrays, Ormiston
1895 Dobbie, Æmilius S., East Fenton, Drem
1877 Dodds, Samuel, Somnerfield, Haddington
1877 Donald, Andrew, Longnewton, Gifford, Haddington
1884 **Elcho**, Lord, M.P., Gosford, Longniddry
1881 Elder, Hugh, East Bearford, Haddington
1890 Elder, James, Haddington
1890 Elder, Thomas, Stevenson Mains, Haddington
1884 Elliot, Walter, Pitcox, Dunbar
1857 Fletcher, J., of Salton, Pencaitland
1849 Ford, Wm., Fenton Barns, Drem
1877 Fyshe, Peter, Newtonlees, Dunbar
1859 Gaukroger, G., Southfield, Longniddry
1883 Gemmell, Wm., Greendykes, Macmerry
1889 Gillespie, William, Athelstaneford, Drem
1855 Gray, Wm., Brownrigg, North Berwick
1882 Gray, W. W., of Nunraw, Prestonkirk
1876 Greenshields, T. A., Windymains, Salton
1893 Gregor, Charles E., Innerwick, East Lothian
1857†**Haddington**, The Earl of, Tyninghame, Prestonkirk
1859 Haldane, Robt., Phantassie, Prestonkirk
1878 **Hall**, Sir Basil F., of Dunglass, Bart., Cockburnspath
1872 Handyside, J. B., Fenton, Drem
1875 Hay, Alex., Gifford Vale, Haddington

Admitted
1862 Hay, Captain J. G. Baird, of Belton, Dunbar
1885 Henderson, George, Upper Keith
1893 **Hepburn**, Sir Archibald Buchan, of Smeaton, Bart., Prestonkirk
1886 Hope, Harry, Oxwell Mains, Dunbar
1865 Hope, Henry W., of Luffness, Drem
1847 Hope, James, East Barns, Dunbar
1878 Hope, William James, East Barns, Dunbar
1893 Horn, Wm., of Woodcote Park, Blackshiels
1877 Houston, M. H., of Beechhill, Haddington
1893 Hume, A., V.S., Haddington
1887 Hunter, Richard, of Thurston, Dunbar
1884 Kerr, John, Barneymains, Haddington
1893 Kerr, William Walker, Ferrygate, Drem
1873 King, William, jun., Wolfstar, Ormiston
1859 **Kinloch**, Sir Alexander, of Gilmerton, Bart., Drem
1885 Kinloch, David A., yr. of Gilmerton, Guards' Club, London
1893 Knox, Robert, Carlaverock, Tranent
1878 Lawrie, Jas. D., of Monkrigg, Haddington
1893 Lee, Joseph, Markle, Prestonkirk
1870 M'Culloch, D., Bank Agent, North Berwick
1864 M'Ewen, J., Redside Farm, North Berwick
1877 Mark, John, Sunnyside, Prestonkirk
1871 Nelson, Charles, Skateraw, Innerwick
1890 Nisbet, C. C., of Stobshiel, Upper Keith
1889 Ogilvy, H. T. N. Hamilton, Biel, Prestonkirk
1893 Park, John, Hoprig, Macmerry
1866 Park, Thos. B., Springfield, Haddington
1865 Punton, F. H., Aberlady Mains, Longniddry
1894 Reid, James, Tyneholm, Pencaitland
1863 Richardson, J., Hilton Cottage, Haddington
1862 Riddell, Wm., Cocklaw, Oldhamstocks, East Lothian
1893 Ritchie, J. B., Samuelston, Haddington
1873 Robertson, James F., Newhouse, Drem
1894 Robertson, John, Beanston Mains, Haddington
1872 Robertson, Robt., West Barns, Dunbar
1874 Robson, John, Millknowe Cranshaws, Duns (Newton, Bellingham)
1895 Ronaldson, George, Kilduff Mains, Drem
1886 Scott, Alex., Summerfield, Dunbar
1883 Scott, G. R., Commercial Bank, Dunbar
1878 Sharp, John J., Ewingston, Gifford—*Free Life Member*
1877 Shields, James, Dolphington, Tranent
1884 Shillinglaw, Wm., Gifford, Haddington
1850 Shirriff, Samuel D., 3 Tantallon Terrace, North Berwick
1887 Simpson, James, Castlemains, Drem
1868 Smith, Andrew, Longniddry
1853 Smith, Chas., Whittinghame, Prestonkirk
1876 Smith, D. W. E., North Elphinstone, Tranent
1882 Smith, E. Hedley, Whittinghame, Prestonkirk—*Free Life Member*
1894 Steven, John, Beghie, Haddington
1893 Stewart, John, Nisbet, Pencaitland
1855 Stodart, William, Wintonhill, Tranent
1863 Stuart, A. C., of Eaglescairnie, Haddington
1862 Swinton, P. Burn, Holyn Bank, Gifford
1853 Sydserff, T. Buchan, of Ruchlaw, Prestonkirk
1855 Taylor, J. B., Seton West Mains, Prestonpans
1859 Turnbull, P., Little Pinkerton, Dunbar

Admitted
1877 Turnbull, Walter, Tynemont, Ormiston
1879 TWEEDDALE, The Marquis of, Yester, Haddington
1859 Tweedie, Alexander, Coats, Haddington
1881 Wallace, John, Hailes, Haddington
1888 Watt, Miss Adelaide, of Spott, Dunbar
1868 Watt, James, New Mains, Drem
1850 Welsh, Alex., Waughton, Prestonkirk
1847†WEMYSS and MARCH, The Earl of, Gosford, Longniddry
1888 Wilson, Peter, Rhodes, North Berwick
1885 Wylie, Major N. M., New Club, North Berwick
1893 Wylie, Robert, Haugh, North Berwick
1897 Wyllie, Alex., Quarryford, Gifford
1895 Wyllie, David, Longnewton, Haddington
1877 Young, D. S., Bonnington, North Berwick
1887 Young, James B., Elphinstone Tower, Tranent
1869 Yule, Edward, Balgone, North Berwick

LINLITHGOW.

1874 Allan, J., Corn Merchant, Bo'ness
1875 Allan, James, jun., Bo'ness
1895 Allison, David, Newton, Winchburgh
1855 Bartholomew, J., Duntarvie, Winchburgh
1883 Bartholomew, John, Duntarvie, Winchburgh
1858 Borthwick, John, V.S., Kirkliston
1895 Bowie, Robt., Parkhead, Linlithgow
1876 Brock, J. E., Overton, Kirkliston
1885 Brownlee, George, Cousland, Bathgate
1875 Brownlee, James, East Whitburn Farm
1865 Bryce, James, East Whitburn, Whitburn
1895 Caddell, Henry M., of Grange, Grange House, Bo'ness
1869 Cadzow, J., Bangour, Uphall
1873 Chapman, James, Balencrieff Mill, Bathgate
1881 Drysdale, And. L., The Leuchold, Dalmeny Park, Edinburgh
1870 Dudgeon, Alex., Humbie, Kirkliston
1869 Dudgeon, George, Almondhill, Kirkliston
1887 Dudgeon, Jn. G., Easter Dalmeny, Dalmeny
1894 Ferguson, John, Sheriff-Clerk of Linlithgow
1889 Ferrier, William C., Birkenshaw, Bathgate

Admitted
1895 Fleming, H. B., The Haugh, Kirkliston
1869 Glendinning, Alex., New Mains, Kirkliston
1876 Graham, William, Wheatlands, Cramond Bridge
1850 Hill, John, Carlowrie, Cramond Bridge
1860 Hog, Thos. A., of Newliston, Kirkliston
1887 Hope, Capt. Thos., of Bridge Castle, Bathgate
1884†HOPETOUN, The Earl of, Hopetoun House, South Queensferry
1892 Hutchison, Thomas, of Carlowrie, Kirkliston
1856 Johnston, John, Bathgate
1880 Learmonth, G. Gray, North Bank, Bo'ness
1863 Lesslie, James, Boghall, Linlithgow
1889 Macaulay, Jas. F., Kinneil Estate Office, Bo'ness
1869 M'Kinlay, John, Balbardie House, Bathgate
1847 M'Lagan, Peter, of Pumpherston, Mid-Calder
1883 MacNab, John, Glenmavis, Bathgate
1879 Masson, Rev. Alex., The Manse, Kirkliston
1867 Meikle, John, Grougfoot, Linlithgow
1879 Meikle, William, East Bonhard, Linlithgow
1886 Melville, G. F., Sheriff-Substitute, Linlithgow
1877 Mitchell, George, Broxburn Park, Broxburn
1859 Morrison, J., West Dalmeny, Dalmeny
1888 Nimmo, Thos., Kirklands, Winchburgh
1873 Orr, James, Hill, Whitburn
1893 Paul, James, Walton, Linlithgow
1896 Ralston, A. Agnew, Hopetoun House, South Queensferry
1868†ROSEBERY, The Earl of, K.G., Dalmeny Park, Edinburgh
1889 Rough, Robert L. (R. Rough & Sons), Broxburn
1882 Russel, James, Dundas Castle, Queensferry
1895 Smith, John, Hopetoun Gardens, South Queensferry
1864 Steuart, Captain R., of Westwood, West Calder
1888 Tod, Wm., Pardovan, Philipstoun, Linlithgowshire
1889 Walker, Thos. Geo., Kilpunt, Broxburn
1895 Wilson, David, Riccarton, by Linlithgow

5.—ABERDEEN DISTRICT.

EMBRACING THE

COUNTIES OF ABERDEEN, BANFF, FORFAR (EASTERN DIVISION), AND KINCARDINE.

ABERDEEN.

Admitted
1872 HER MOST GRACIOUS MAJESTY THE QUEEN
1878*HIS ROYAL HIGHNESS THE PRINCE OF WALES

1868†ABERDEEN, The Earl of, Haddo House, Methlick
1885 Abernethy, David W., Ferryhill Foundry, Aberdeen
1884 Adam, Alexander, 38 Gilcomston Park, Aberdeen
1890 Adam, Walter, Corskellie, Huntly
1876 Ainslie, Ainslie Douglas, of Delgaty Castle, Turriff
1875 Ainslie, Wm., Pitfour, Mintlaw
1894 Aitchison, Walter, Coniecleuch, Huntly
1876 Alexander, George, South Balnoon, Huntly
1894 Allan, David, Union Street, Aberdeen
1889 Allan, John, Aikenshill, Culter Cullen, Aberdeen
1894 Anderson, Geo., Nether Aucharnie, Forgue, Huntly
1893 Anderson, George, Sandford Lodge, Peterhead
1885 Anderson, George, West Fingask, Old Meldrum
1876 Anderson, John M., Huntly
1896 Anderson, John R., Bon Accord Works, Aberdeen
1881 Anderson, Robert, Wester Coull, Tarland
1894 Anderson, Wm., Saphock, Old Meldrum
1876 Anderson, William, Manse, Lynturk, Alford, Aberdeen
1876 Anderson, William, Wardes, Kintore
1885 Angus, Samuel, Bonnymuir, Aberdeen
1895 Annand, John F., Banchory—*Free Life Member*
1882 Argo, James, Cairdseat, Udny, Aberdeen
1894 Arnott, Geo., Leather Merchant, Huntly
1885 Bain, George, Parkside, Old Meldrum
1893 Ballingall, Robert Rennie, Crimmonmogate, Lonmay
1858 Barclay, C. A., Aberdour House, Fraserburgh
1862 Barclay, J. W., 60 Dee Street, Aberdeen
1885 Barclay, Morrison, 60 Dee Street, Aberdeen
1893 Baron, James, C.E., 7 Union Terrace, Aberdeen
1884 Barron, Geo. F., Meikle Endovie, Alford, N.B.
1888 Baxter, Andrew, 7 Millburn Street, Aberdeen
1885 Bean, James, Mains of Dumbreck, Udny
1882 Beaton, James, Burnside House, Turriff
1885 Beaton, John, Station Hotel, Insch

Admitted
1876 Beedie, James, The Mains, Ardlaw, Fraserburgh
1876 Bell, John, Tyrie Mains, Fraserburgh
1894 Bennet, Jas., Binghill, Peterculter, by Aberdeen
1888 Bennet, L., Crookednook, Longside
1894 Bennet, Wm., Midplough, Huntly
1858 Benton, William, Harthill, Whitehouse
1885 Black, James, Barthol Chapel, Old Meldrum
1894 Black, Wm., Kinernie, Dunecht, Aberdeen
1893 Booth, Matthew, Mastrick Stocket, Aberdeen
1884 Bothwell, Wm., Berryhill, Bridge of Don, Aberdeen
1879 Bowman, James, Square, Huntly
1895 Brand, Robert, Ardiffery, Cruden, Ellon
1892 Brown, Jas., Commercial Hotel, Turriff
1886 Brown, James H., Banker, Ellon
1884 Brown, John, Craigie Cottage, Hardgate, Aberdeen
1883 Brown, Joseph, Little Endovie, Alford
1894 Brown, Robert, Mains of Williamson, Culsalmond
1868 Bruce, George, Heatherwick, Keith Hall
1876 Bruce, James, Collithie, Gartly
1868 Bruce, James, Inverquhomery, Mintlaw
1876 Bruce, Peter, Myreton, Insch, Aberdeen
1894 BURNETT, Sir Thomas, of Leys, Bart., Crathes Castle, Aberdeen
1875 Burr, Alexander, Tulloford, Old Meldrum
1895 Butchart, James, Advocate, Aberdeen
1876 Campbell, Silvester, Tofthills, Aberdeen
1895 Cantlay, John, Ashallow, Cruden
1894 Cardno, Andrew P., Bogenlea, Monquhitter, Turriff
1895 CARNEGIE, Lord, Crimmonmogate, Lonmay
1894 CATHCART, Sir Reginald A. E., Bart., Cluny Castle, Aberdeen
1894 Chalmers, John Lovie, Wester Cardno, Fraserburgh
1864 Chalmers, Wm., Marson Croft, Elrick, Summerhill, Aberdeen
1894 Chapman, William, Woodhead, Aberdour, Fraserburgh
1873 Charles, John, Town and County Bank, Inverurie
1894 Charles, Wm., Gammons, Rothie-Norman
1894 Chessor, James, Craigiebanks, Fraserburgh
1869 CLARK, Sir John F., of Tillypronie, Bart., Tarland
1893 Clarke, John Charles, Meddat, Parkhill, Aberdeen
1873 Clarke, William, Hopewell, Tarland
1858 Cochrane, James, Pitlurg House, Slains, Ellon

Admitted
1893 Cocker, George, Hill of Petty, Fyvie
1894 Cocker, Jas., sen., Sunnypark Nurseries, Aberdeen
1886 Collie, Wm., Priestwells, Insch
1871 Cook, Charles, Carden House, Aberdeen
1894 Cook, Thos. Nicol, Dorsell, Alford, Aberdeen
1894 Cooper, John A., Dunnydeer, Insch
1876 Copland, Alex., Commercial Co., Aberdeen
1891 Copland, Robt., Milton, Ardlethen, Ellon
1840 Cordiner, W. F., Mormond House, Cortes
1894 Cormack, James W., Kinmundy, Summerhill, Aberdeen
1869 Couper, J. C., of Craigiebuckler, Aberdeen
1894 Couper, J. C. Ogston, of Craigiebuckler, Aberdeen
1868 Cowie, Alex., jun., Turtory, Huntly
1892 Cowie, W. R., Ythan Cottage, Ellon
1887 Crabb, Dd., New Aberdour, Fraserburgh
1894 Craighead, J. W., Tarbothill, Bridge of Don
1894 Craigie, Wm., Pennan Farm, New Aberdour, Fraserburgh
1878 Cran, George, Old Morlich, Inverkindie
1894 Cran, George, M.D., Walbrook House, Banchory
1876 Cran, James, jun., Knockandoch, Whitehouse
1894 Cromar, Peter, Bogloch, Lumphanan
1868 Cruickshank, Andrew, 37 Gordon Street, Huntly
1876 Cruickshank, J., Ladysford, Fraserburgh
1894 Cruickshank, Jas., Mains of Mayen, Rothiemay
1894 Cruickshank, John, Mains of Balmaud, Fishrie, Turriff
1894 Cruickshank, Robert, Claymires, Turriff
1876 Dakers, James, 24 Union Row, Aberdeen
1886 Darling, D. C., Exchange Square, Aberdeen
1895 Davidson, Adam, Boghead of Denlugas, Turriff
1896 Davidson, Capt. D. F., 79th Cameron Highlanders, of Dess, Aberdeenshire
1894 Davidson, Jas., of Holmwood, Aberdeen
1893 Davidson, James, The Mains, Haddo House, Aberdeen
1894 Davidson, James, Newton, Cairnie, Huntly
1894 Dawson, Geo., The Manor Farm, Memsie, Fraserburgh
1886 Dawson, W. F. G., North of Scotland Bank, Insch
1882 Dewar, Alexander, Bethlin, Midmar, Aberdeen
1896 Diack, James, Pittodrie, Pitcaple
1858 Donald, James, Whitemyres House, Old Skene Road, Aberdeen
1892 Duff, Archibald, of Annfield, Aberdeen
1884 Duff, G. A., of Hatton, Turriff
1868 Duff, Col. James, Knockleith, Turriff
1894 Duff, James Murray, 45 Guild Street, Aberdeen
1858 Duguid-M'Combie, P., of Easter Skene, Aberdeen
1894 Dunbar, A. Duff, V.S., 55 Belmont St., Aberdeen
1886 Duncan, Alexander, Bridge of Dee, Aberdeen
1877 Duncan, John, Fortrie, King Edward
1877 Duncan, Patrick, Balchers, King Edward
1894 Durno, James, Easter Town, Old Meldrum
1879 Durno, James, Jackston, Rothienorman
1894 Durno, James, Westertoun, Warthill
1885 Durno, Leslie, Mains of Glack, Old Meldrum

Admitted
1891 Durward, Robert, Blelack, Coldstone, Dinnet
1868 Duthie, William, Banker, Tarves
1894 Edmond, John, of Kingswell, Advocate, 16 Bridge Street, Aberdeen
1895 Farquhar, James, Old Echt, Aberdeen
1865 Farquharson, J., 1 Abbotsford Place, Aberdeen
1872 Ferguson, Lieut.-Col. George A., of Pitfour, Mintlaw
1885 Ferguson, Geo. A., Lessendrum, Drumblade
1893 Ferguson, James, jun. of Kinmundy, Mintlaw (10 Wemyss Place, Edin.)
1868 Ferguson, Thomas, 46 Don Street, Old Aberdeen
1870 Ferguson, William, of Kinmundy, Aberdeen (10 Wemyss Place, Edinburgh)
1894 Fiddes, Alex. Harvey, Meikle Haddo, Foveran
1895 Fletcher, Alex., Land Steward, The Mains, Glenbucket, N.B.
1865 Foggo, R. G., Invercauld Office, Ballater
1872 FORBES, Right Hon. Lord, Castle Forbes, Keig
1862 FORBES, The Hon. J. O., of Corse, Lumphanan
1895 Forbes, James, Balmoral, Ballater
1893 Forbes, J. C. Ogilvie, of Boyndlie, Fraserburgh
1874 Forbes, James, Tombreck, Glenbucket
1842 FORBES, General Sir John, of Inverernan, K.C.B., Strathdon
1885 Forbes, William, Ruthven, Dinnet
1874 Fowler, William, of Asleed, Methlick
1885 Fowlie, James, Brucehill, New Deer
1869 Fraser, Col. Fred. Mackenzie, of Castle Fraser, Aberdeen
1885 Fraser, George, Hill of Skillmafilly, Ellon
1892 Fraser, Wm. N., of Findrack, Torphins
1894 Gall, Wm., Smiddyburn, Rothienorman
1874 Garden, Robert, Mains of Tolquhon, Tarves
1857 Garden, William, 365 Great Western Road, Aberdeen
1882 Garioch, Peter, Broadford House, Aberdeen
1894 Garland, Thos., jun., Ardlethen, Ellon
1882 Garvie, R. G., Hardgate Iron Works, Aberdeen
1886 Geddes, Alex., of Blairmore, Glass, Huntly
1876 Gibson, H. J., 19 Silver Street, Aberdeen
1893 Gibson, Thomas Hayton, Culterculien, Foveran
1876 Gordon, A. M., of Newton, Insch
1894 Gordon, Charles T., of Cairness, Lonmay
1894 Gordon, Donald, jun., Bovaglie, Ballater
1876 Gordon, Henry, of Manar, Inverurie
1886 Gordon, Henry G. Fellowes, of Knockespock, Clatt
1868 Gordon, H. W., of Hallhead, Ellon
1889 Gordon, Robert, Gordonston, Clatt, Kennethmont—*Free Life Member*
1876 Gordon, William, Auchallater, Braemar
1894 Gordon, Wm. Fowlie, Broomhills, Pitsligo
1889 GRANT, Sir Arthur, of Monymusk, Bart.
1876 Grant, John, Banker, Methlick
1895 Grant, P. A. H., of Drumminor, Rhynie
1894 Grant, William, Faichill, Gartly
1894 Gray, William, Balgove, Old Meldrum
1894 Gray, William, Keilyford, Old Meldrum
1894 Gray, Wm., Mains of Shedocksley, Old Skene Road, Aberdeen
1890 Hadden, Gavin, Dalmuinzie, Murtle
1894 Hadden, Martin L., Binghill, Murtle, Aberdeen
1864 Halkett, Jas., Auchentender, Insch

Admitted
1876 Hall, Alex. H., 8 Braemar Place, Aberdeen
1894 Harvey, Alex. Hunter, Drums, Newburgh, Aberdeenshire
1876 Harvey, G. T., 68 Union Street, Aberdeen
1854 Harvey, J. H., Pitgersie, Foveran, Ellon
1885 Hay, Alexander (Ben. Reid & Co.), Guild Street, Aberdeen
1862 Hay, Col. A. S. L., of Rannes, C.B., Kennethmont
1858 Hay, James, Little Ythsie, Tarves
1894 Henderson, James, Orchard Cottage, Old Aberdeen
1894 HENDERSON, Sir William, of Devanha, Aberdeen
1893 Hendry, Peter, Hillockhead, Huntly
1894 Howie, Peter, 10 E. North Street, House, Aberdeen
1892 Huggan, John A., 35 Market St., Aberdeen
1876 Hunter, Capt. A. C., of Tillery and Auchiries, Aberdeen
1884 Hunter, Charles, Upper Mills of Drum, Crathes
1894 Hunter, James, 173 King Street, Aberdeen
1872†HUNTLY, The Marquis of, Aboyne Castle, Aboyne
1884 Hutcheon, Alex., Nether Ordley, Auchterless, Turriff
1886 Hutcheon, Major John, Lower Cotburn, Turriff
1887 Hutcheon, John, of Upperton, Gask House, Turriff
1890 Innes, Lt.-Colonel Francis Newel, R.N., R.A., yr. of Learney, Torphins
1846 Innes, Col. Thos., of Learney, Aberdeen
1862 Innes, T. G. Rose, of Netherdale, Turriff
1859 Ironside, William, Clofrickford, Ellon
1894 Jessieman, Robt., Cairnhill, Huntly
1893 Johnstone, A. G., 12 Virginia Street, Aberdeen
1894 Johnston, Charles, Wholesale Merchant, Aberdeen
1894 Johnston, John, Prioryhill, Peterculter
1876 Johnstone, J., Drumwhindle Mains, Ellon
1890 Keiller, John M., Craigendarroch, Ballater
1876 Keith, Alexander, Chapelton, Ellon
1894 Keith, Alexander, Kinnermit, Turriff
1894 Keith, Alex., Spreader Hill, Lonmay
1885 Law, John, Lochend, Old Meldrum
1871 Lawson, Charles, Deebank, Cults
1868 Lawson, C., Ordhead, Cluny, Aberdeen
1876 Ledingham, A., Balnoon Cottage, Forgue, Huntly
1885 Ledingham, John, Fintry, Turriff
1889 Ledingham, J. K., North Plaidy, Turriff —*Free Life Member*
1894 Leggat, Jas. W., Garnieston, Turriff
1896 Leith, Capt. Alex., of Glenkindie, West Hall, Oyne, Insch
1890 Leith, A. J. Forbes, of Fyvie Castle, Fyvie
1869 Leith, Major Thomas, Petmathen, Oyne
1885 Leslie, David, Lochhills, New Machar
1884 Leys, James, Asloun, Alford
1892 Littlejohn, Geo., Wellhouse, Alford, N.B.
1857 Lovie, Alex., Nether Boyndlie, Fraserburgh
1894 Lumley, Theodore, Commissioner, Strichen Estate, Strichen
1869 Lumsden, Henry, of Pitcaple, Pitcaple
1877 Lumsden, H. G., of Auchindoir, Aberdeen
1876 Lumsden, W. H., of Balmedie, Aberdeen
1894 Lyon, Alex., jun., 278 George Street, Aberdeen

Admitted
1884 Lyon, John, Peterwell, Fyvie
1895 MacBeth, Jas., Music Seller, Aberdeen
1894 Macdonald, Jas., Bridgend, Mossat, Kildrummy, Aberdeen
1868 Macdonald, R., Cluny Castle, Aberdeen
1884 M'Intosh, Jas., 50 Market Buildings, Aberdeen
1880†MACKENZIE, Sir A. R., of Glenmuick, Bart., Braiklie House, Ballater
1883 Mackenzie, Wm., 23 Adelphi, Aberdeen
1894 Mackie, Wm., Lewes, Fyvie
1871 Mackie, William, Petty, Fyvie
1894 M'Killigin, Dr, Midtown of Haddo, Turriff
1869 Mackinnon, L., jun., Advocate, Aberdeen
1894 M'Laggan, Jas., Bank Agent, Torphins
1887 M'Lean, Neil, of Breda, Alford, N.B.
1894 M'Leod, Robt., Oakbank Cottage, Aberdeen
1889 Macpherson, And., Gibston, Huntly
1883 M'Robbie, Alex., Sunnyside, Aberdeen
1891 M'Robbie, John S., Sunnyside, Aberdeen
1884 Maitland, John, Easter Balhalgardy Inverurie
1894 Maitland, Robert Cruickshank, Balhalgardy, Inverurie
1894 Mark, William, 69 George Street, Huntly
1876 Marr, John, Cairnbrogie, Old Meldrum
1855 Marr, Wm. Smith, Upper Mill, Tarves
1883 Marr, W. S., jun., Upper Mill, Tarves
1894 Marshall, Bailie Alexander, Townhead, Kintore
1885 Matthews, Jas., 255 Union Street, Aberdeen
1894 Mearns, Lord Provost Daniel, Quayside, Aberdeen
1875 Mearns, Rev. Duncan G., Oyne Manse, Aberdeenshire
1892 Mennie, A. M'G., Brawlandknowes, Gartly
1875 Merson, James, Craigwillie, Huntly
1893 Merson, John, Millhill, Gartly
1895 Michie, John, Forester, Balmoral, Ballater
1876 Middleton, Alex., Belmont, Aberdeen
1895 Milligan, D. M. M., 245 Union Street, Aberdeen
1855 Milne, Alex., Lilybank Temperance Hotel, Belmont Road, Aberdeen
1894 Milne, George, Cummings Park, Woodside, Aberdeen
1891 Milne, James, Gateside, Old Meldrum
1894 Milne, James, Pittendrum, Pitsligo, Fraserburgh
1867 Milne, John, Inverurie—*Free Life Member*, 1873
1887 Milne, Robt., Corse of Kinnoir, Huntly
1895 Minty, Wm., Crimmonmogate Mains, Lonmay, Aberdeenshire
1876 Mitchell, William, Mains of Biffie, Old Deer
1868 Mitchell, Wm. A., Auchnagathel, Keig
1881 Moffatt, Wm., Great N. of S. Railway, Aberdeen
1886 Moir, Alexander, Rowan Bank, Woodside, Aberdeen
1885 Moir, Robert, Tarty, Ellon
1871 Morris, W., V.S., 7 Langstane Place, Aberdeen
1894 Morrison, Alex. Smith, Stonebriggs, Pitsligo, Fraserburgh
1885 Morrison, Andrew, Upper Cotburn, Turriff
1876 Morrison, John, jun., Hattonslap, Tarves, Old Meldrum
1894 Mowat, John, Craigmaud, by New Pitsligo
1872 Muirhead, George, Haddo House Mains, Aberdeen

Admitted
1894 Murdoch, John, Belnaboth, Glenbucket, Aberdeenshire
1879 Murray, James, Fauchfaulds, Turriff
1894 Murrison, A. R., 52 Green, Aberdeen
1894 Mutch, James G., Drumduan House, Banchory-Devenick
1872 Nares, A. F., Parkhill, Aberdeen
1869 Nicol, W. E., of Ballogie, Aboyne
1882 Norrie, Wm., Cairnhill, Monquhitter, Turriff—*Free Life Member*
1894 Ogg, Charles, Baltimore, Glenbucket
1882 Ogston, Alex. M., of Ardoe, Aberdeen
1894 Park, Wm., Woodhead, Cairness, Lonmay, Fraserburgh
1894 Paterson, James, 15 Regent Quay, Aberdeen
1882 Paull, James, Advocate, Aberdeen
1894 Peters, David Cant, Aberdeen Lime Co., Aberdeen
1894 Philip, John, 2 Kirk Street, Old Meldrum
1894 Philip, William, Boynds, Inverurie
1895 Pirie, Arthur, Cartlehaugh, Mintlaw Station
1895 Pirie, A. C., Craibstone House, Buxburn, by Aberdeen
1859 Pittendrigh, A., Mains of Park, Lonmay
1894 Porter, Alex., Springhill, Old Skene Road, Aberdeen
1895 Price, William, Factor, Aden Estate Office, Mintlaw Station
1893 Profeit, Alex., jun., Dorsincilly, Glenmuick, Ballater
1894 Pyper, Wm., Hillhead, Aberdeen
1894 Rae, Jas. G., Culterty, Newburgh, Aberdeen
1882 Rae, John, Corn Merchant, Ellon
1882 Rae, Wm., Advocate, Aberdeen
1894 Ramsay, Capt. Burnett, Rifle Brigade, Banchory Lodge, Banchory
1894 Ramsay, William, jun., Dyce
1891 Reid, David, Crofts of Glenmuick, Ballater
1877 Reid, Dr James, Templeton, Mossat
1884 Reid, John, Balquharn, Alford, N.B.
1894 Reid, John, Carter, Peterhead
1894 Reid, John Low, Cromlybank, Ellon, Aberdeenshire
1884 Reid, W. R., 46A Union Street, Aberdeen
1885 Reid, Wm., 8 Haddon Street, Aberdeen
1894 Reith, Jas., Mains of Sclattie, Auchmill, Aberdeen
1876 Reith, Robert, Middlefield, Woodside, Aberdeen
1894 Riddell, Geo. Jas., Provost Jamieson's Quay, Aberdeen
1876 Robertson, Duncan, Sheriff of Aberdeen
1885 Robson, Alex. (W. Smith & Sons), Aberdeen
1858 Ross, H., care of the Secretary, Mutual Improvement Association, Tarland
1843 Ross, John Leith, of Arnage, Ellon
1871 Ross, Peter, Arngrove, Torphins
1893 Ross, Robt. Robertson, 389 Holburn St., Aberdeen
1871 Ross, Wm., Annesley, Torphins
1885 Runciman, James, Castleton, King Edward
1885 Runciman, John, Auchmull, King Edward
1894 Russell, Col. F. S., C.M.G., of Aden, Mintlaw
1854 Ruxton, Andrew, South Artrochie, Ellon
1894 Ruxton, Chas., Ythan Lodge, Newburgh, Aberdeen
1894 Ruxton, George, Langley, Ellon, Aberdeenshire
1886 SALTOUN, Right Hon. Lord, Philorth House, Fraserburgh

Admitted
Scott, Jas., Bruxie, New Maud, Aberdeenshire
.894 Scott, John, Factor and Banker, New Pitsligo
.881 Scott, Ronald, 58 Fountainhall Road, Aberdeen
.894 Scott, William, Corsiestone, Huntly
.857 Scott, W., Urquhart Road, Old Meldrum
.885 Sellar, R. H. N., Implement Maker, Huntly
.857 SEMPILL, Right Hon. Lord, Fintray House, Aberdeen
1895 Seton, Major Alexander D., Mounie, Old Meldrum
1894 Sharp, Jas. Smith, Burryhillock, Premnay
1868 Shaw, James, Tillyching, Lumphanan
1894 Shearer, Eric Jas., Maybank Works, Turriff
1865 Shepherd, George, Shethin, Tarves
1896 Shepherd, William, Bellestraid, Logie Coldstone, Dinnet
1894 Shirras, Geo. Findlay, 46 School-hill, Aberdeen
1866 Sim, Alexander, 1 Market Street, Aberdeen
1894 Simpson, George, Fernhill, Aberdeen
1894 Simpson, James, Grain Merchant, Rothiemay Station
1885 Simpson, John, Implement Maker, Peterhead
1895 Sivewright, Adam, M.R.C.V.S., Tarland
1856 Skinner, James, Woodside, Aberdeen
1889 Skirving, Robert, of Cobairdy, Huntly
1858 Sleigh, John, Strichen Mains, Strichen
1896 Sleigh, John P., Hillhead of Crimond, Lonmay
1885 Smith, Arthur, Oakbank Cottage, Kingsgate, Aberdeen
1894 Smith, Duncan M., 27 Argyll Place, Aberdeen
1885 Smith, James, Burnshangie, Strichen
1885 Smith, J. S., Northern Agricultural Company, Aberdeen
1894 Smith, Robert, jun., Boggieshalloch Turriff
1894 Smith, W. J. Woodman, 20 King Street, Aberdeen
1858 Stephen, James, Lethenty, Inverurie
1896 Stewart, Alexander G., Ballaterach, Dinnet
1889 STEWART, Sir David, of Banchory, Banchory House, Aberdeen
1857 Stewart, Samuel, 44 Whitehall Road, Aberdeen
1885 Still, Alexander W., Nether Anguston, Peterculter
1885 Still, Geo., Strathray, Kinnellar, Blackburn, Aberdeen
1894 Stoddart, Geo., Airyburn, Dyce
1893 Stoddart, George, Annfield, Huntly
1883 Strachan, Alex., Wester Fowlis, Alford
1878 Strachan, Charles, Tillyorn, Tarland
1858 Strachan, Lewis, Cluny of Raemoir, Banchory
1894 Strachan, Lewis, Tulloch, Lumphanan
1894 Strachan, Patrick, Eastown, Tarland
1894 Strachan, Wm., Upper Muirden, Turriff
1865 Stuart, Alexander, of Laithers, Turriff
1885 Stuart, E. R. Burnett, of Dens and Crichie, Mintlaw
1894 Stuart, Wm., Earlsfield, Kennethmont
1876 Tait, John, Crichie, Inverurie
1876 Taylor, James, Toux, Mintlaw
1894 Taylor, J. W., Middle Ardo, Belhelvie
1894 Tennant, Jas., Honeynook, Monquhitter, Turriff
1875 Thomson, Wm., Banker, Tarland
1894 Tough, George, 70 John Street, Aberdeen
1877 Turnbull, Peter M., Smithston, Gartly

Admitted
1853 Turner, John, of Turner Hall, Ellon
1873 Udny, J. H. F., of Udny and Dudwick, Aberdeen
1876 Urquhart, Major F. P., of Craigston, Turriff
1888 Walker, Alex., Gunhill, Inverurie
1884 Walker, David, Coullie, Udny
1893 Walker, Roderick, Meiklefolla, Rothienorman
1858 Walker, Wm., Ardhuncart, Mossat
1894 Watson, David, Burnthill, Pitsligo, Fraserburgh
1894 Watson, Wm., Middlemuir, Aberdour, Strichen
1894 Watt, George, Coralhill, Fraserburgh
1868 Watt, Gordon, Mains of Kebbaty, Sauchen
1889 Watt, John, Newton of Mounie, Daviot, Old Meldrum
1894 Watt, Wm., Grain Merchant, Insch
1894 Wattie, John, Milton, Glenbucket
1894 Webster, James C., Millmoss, Turriff, N.B.
1898 Webster, William, Towie Barclay, Auchterless, Turriff
1894 White, Jas., Legatsden, Pitcaple
1882 Whyte, John, 245 Union Street, Aberdeen
1873 Wilken, George, Waterside of Forbes, Alford
1858 Williamson, A. F., Durno House, Pitcaple, Aberdeen
1850 Williamson, George, 194 King Street, Aberdeen
1894 Williamson, R. D., Bendauch, Dyce
1895 Wilson, Alex. S., 3 Market Square, Old Meldrum
1894 Wilson, C. F., College Street, Aberdeen
1876 Wilson, George, The Square, Insch
1894 Wilson, Geo., Badentyre, Turriff
1892 Wilson, James, jun., University, Aberdeen—*Free Life Member*
1865 Wilson, John, Castle Park, Huntly
1895 Wilson, Robt. M., M.D., Old Deer, Mintlaw Station
1885 Wilson, Wm., Coynachie, Gartly
1838 Yeats, William, of Aquharney, Beaconshill, Aberdeen
1895 Yool, William, Glenlogie, Forbes, Aberdeen
1868 Yull, John S., Little Ardo, Methlick

BANFF.

1885 Alcock, John, Balvenie, Dufftown
1893 Allan, George M., of Montbletton, Banff
1893 Anderson, James, Minmore, Glenlivet
1893 Andrew, William, Rannes, Buckie
1893 Barclay, Geo., Strocherie, King Edward, Banff
1893 Beaton, L., The Farm, Cullen House, Cullen
1893 Bisset, James, of Paddocklaw, Kilnshade, Macduff
1874 Bruce, G., Tochineal, Cullen
1852 Bryson, W. G., Strathlene, Cullen
1894 Cameron, Geo., Bogbain, Keith, N.B.
1875 Campbell, James, Cullen House, Cullen
1887 Cowie, Geo., jun., Pitglassie, Dufftown
1883 Cran, John, Butcher, Keith
1868 Cumming, George, Writer, Banff
1889 Cumming, J. F., Cardow, Craigellachie
1876 Dawson, William, Gordon Castle, Fochabers
1893 Dey, James, Forkins, Botriphnie, Keith
1893 Donald, George, of Ladyhill, Grange, Keith
1880 Duff, Thomas Gordon, of Drummuir, Keith

Admitted
1888 Duncan, G. A., Foundry, Banff
1868 Duncan, R., Auchenbaidie Mains, Banff
1883 Duncan, Robert, Banff
1884 FIFE, The Duke of, K.T., Duff House, Banff
1893 Fortune, John, Broom, Portsoy
1894 Fowler, David, Ladysbridge Asylum, Banff
1884 Gilchrist, James, Baker, Banff
1895 Gill, George, of Bloodymire, Macduff
1881 Gordon, John P., of Cairnfield, Fochabers
1876 Gordon, P. G., Nevie, Glenlivet, Ballindalloch
1886 Graham, William, Brewer, Banff
1876 Grant, G. S., Auchorachan, Glenlivet, Ballindalloch
1874 Green, Robert, Ruthrie, Aberlour
1893 Horn, Alex., Brangan, Portsoy
1894 Hutcheson, Wm. Anton, Auchiss, Fordyce, Portsoy
1876 Inkson, Thomas F., Kinermony, Craigellachie
1881 INNES, Sir J., of Balveny and Edingight, Bart., Keith
1874 Kelmam, William, Burnside, Buckie
1883 Kemp, James, Lime Works, Keith
1896 Law, Charles E., Hall Farm, Keith
1892 Leslie, Alexander, Braco House, Grange, Banffshire
1876 Leslie, A. F., Montcoffer House, Banff
1894 Livingstone, William, Newton of Mountblairy, Banff
1894 Longmore, George, Rettie, Boyndie, Banffshire
1885 Longmore, Leith E., Rettie, Banff
1897 LUMSDEN, General Sir Peter, G.C.B., of Buchromb, Dufftown
1883 M'Donald, Alexander (M'Donald Bros.), Portsoy
1885 M'Donald, Alexander, Kinbrough, Fordyce
1884 MacGillivray, A. E., V.S., Banff
1891 MacIntosh, William, Drummuir, Keith
1876 Macpherson, J., Mulben, Keith
1887 Maitland, Harry Reid, Muiryfold, Grange, Keith—*Free Life Member*
1858 Maitland, William, Muiryfold, Grange Keith
1893 Marsden, Wm. James, V.S., Castle St., Banff
1880 Menzies, W. G. Steuart, Aikenway, Craigellachie
1867 Michie, C. Y., Forester, Cullen House
1874 Miller, John, Seafield, Cullen
1893 Moggach, Joseph, Mains of Towiebeg, Botriphnie, Keith
1893 Morison, Alex. O., Corskie, Banff
1886 Morison, Col. F. D., of Mountblairy, Turriff
1885 Morison, Jas. O., of Culvie, Aberchirder
1885 Morrison, John, Knock, Keith
1893 Murray, Alex., Old Manse, Boyndie, Banff
1858 Murray, William, Mains of Pittendreigh, Turriff
1873 Ogilvie, A. M., Tillynaught, Portsoy
1873 Paterson, Wm., Auldtown of Carnousie, Turriff
1892 Raffan, Robert, Knowiemoor, Fordyce
1869 Ramsay, Alex., *Banffshire Journal* Office, Banff
1884 Reid, Wm. T., of Ardmellie, Banffshire
1840*RICHMOND and GORDON, The Duke of, K.G., Gordon Castle, Fochabers
1895 Robertson, Wm., Grain Merchant, Banff
1896 Ross, James, Mill of Towie, Keith
1893 Ross, William, Hilton, Buckie
1893 Seafield, Countess-Dowager of, Cullen House, Cullen

Admitted
1868 Shand, Geo., Ordens, Boyndie, Banff
1883 Simpson, Alexander, Duff House, Banff
1876 Simpson, J. (Auchinachie & Simpson), Keith
1894 Simpson, Thos. A., Colleonard, Banff
1891 Simpson, Wm., Douglasbrae Manure Works, Keith
1894 Skene, John, Montbletton Lodge, Banff
1874 Skinner, Wm. M., Drumin, Ballindalloch
1883 Smith, Alex., Inchcorsie, Rothiemay
1894 Smith, George, Parkmore House, Dufftown
1852 Smith, J. Gordon, Minmore, Ballindalloch
1869 Smith, J., Mullochard, Ballindalloch
1845 Steuart, And., of Auchlunkart, Keith
1887 Stuart, A. R., of Inverfiddich, Craigellachie
1878 Stuart, C., Tomindugle, Knockando, Craigellachie
1896 Taylor, Alexander, Balvenie, Dufftown
1894 Taylor, William L., Union Bank, Cullen
1894 Thomson, Wm., Tynet Mills, Port-Gordon
1876 Turner, R., Auchnarrow, Ballindalloch
1883 Turner, Robert, Cairnton of Boyndie, Portsoy
1881 Walker, George, Milton Distillery, Keith
1894 Ward, James, Forester, Seafield Estates, Keith
1885 Wilson, James, Inchgower, Fochabers
1893 Wilson, James, of Myrieward, Tenrood, Botriphnie, Keith

FORFAR

(Eastern Division).

1889 Adam, John, Bolshan, Arbroath
1893 Adamson, William S., Careston Castle, Brechin
1893 Allison, Archibald, Dubton, Brechin
1884 Anderson, D., Woodhill, Carnoustie
1884 Anderson, James, Mains of Parkhill, Arbroath
1863 Anderson, Jas., Westside, Brechin
1890 Arnot, David, Mains of Edzell, Brechin
1896 Arnot, William, Fithie, Brechin
1876 Bean, Alexander, Ballochy, Montrose
1876 Bean, George, West Ballochy, Montrose
1890 Bell, James, Gilchorn, Arbroath
1894 Campbell, Dr Archibald, Keenie, Edzell
1849 Campbell, J. A., of Stracathro, M.P., Brechin
1887 Campbell, Jas. Morton Peto, yr. of Stracathro, Brechin
1886 Carnegie, Alex., of Redhall, Forebank House, Brechin
1869 Carnegie, H. L., of Kinblethmont, Arbroath
1894 Carnegie, James, Arrat, Brechin
1887 Chalmers, P., Aldbar Castle, Brechin
1890 Collier, John W., Hatton, Carnoustie
1879 Colquhoun, Dug., Vitriol Works, Carnoustie
1893 Coupar, Andrew, jun., West Kintrockat, Brechin
1859 Coupar, John, Balrownie, Brechin
1855 Croll, John, Orchard Park, Broughty Ferry
1874 Cruickshank, Geo., Bryanton, Arbroath
1891 Cruikshank, A. W., of Langley Park, 5 Branch Hill, Hampstead, London, N.W.
1895 Davidson, William, Aldbar, Brechin
1858 Dickson, James A., Woodville, Arbroath
1875 Duncan, A. R., Rosemount, Montrose
1869 Duncan, Jas., Panlathie Mill, Carnoustie
1862 Erskine, J. E., of Linlathen, Broughty Ferry
1884 Fairweather, John, Chapletown, Brechin

Admitted
1892 Falconer, James, Milton of Conon, Carmyllie, Arbroath
1894 Farquhar, Alexander, Careston, Brechin
1894 Ferguson, William, Ironmonger, Brechin
1885 Finlayson, James, Balcathie, Arbroath
1890 Fleming, Alex., Charleton, Montrose
1891 Fleming, James, Friock Mains, Friockheim
1890 Fletcher, Fitzroy C., of Letham Grange, Arbroath
1894 Fraser, Andrew, Balmachie, Carnoustie
1890 Gardyne, James W. Bruce, Middleton House, Friockheim
1895 Grant, Colin, Denfield, Arbroath
1893 Hall, George, Caithness Cottage, Carnoustie
1894 Henderson, James, Kincraig, Brechin
1880 Hume, David, Barrelwell, Brechin
1896 Hynd, James, jun., Hodgeton, Inverkeillor, Arbroath
1894 Ireland, Thomas, Brewer, Brechin
1858 Jamieson, D., Auchmithie Mains, Arbroath
1894 Jarron, James Alexander, Arbikie, Inverkeillor, Arbroath
1896 Johnstone, James D., Orange Lane, Montrose—*Free Life Member*
1894 Johnstone, John, Balnabreck, Brechin
1890 Kydd, James, Scryne, Carnoustie
1890 Lamb, David, Fithie, Farnell, Brechin
1897 Leighton, John, of Balglassie, Brechin
1895 Lyall, Alexander, of Gardyne Castle, Montrose
1854 Lyall, David, of Gallery, Montrose
1881 M'Corquodale, D. A., Banker, Carnoustie
1880 Macfarlane, David, West Haven, Carnoustie
1894 M'Intosh, Thomas, Balquarn, Brechin
1887 MacNab, William, Keithock, Brechin
1889 Miller, James, Balgillo, Broughty Ferry
1889 Miln, George, Solicitor, Arbroath
1894 Milne, Andrew C., Grange, Inverkeillor, Arbroath
1894 Milne, George Gardyne, Montrose
1881 Milne, John, Corn Merchant, Montrose
1879 Mitchell, James, Merchant, Montrose
1881 Mitchell, Wm., Ledmore, Menmuir, Brechin
1868 Morgan, D., South Mains of Ethie, Arbroath
1890 Nicoll, G. F., Chapelton of Leysmill, Arbroath
1884 Nicoll, Wm., Hilton of Fearn, Brechin
1893 Nicoll, William, jun., Mains of Gallery, Montrose
1890 Ogilvie, James Swan, Brackenbrae, Broughty Ferry
1890 Ouchterlony, Lt.-Col. T. H., The Guynd, Arbroath
1885 Pattullo, Jas., Abertay, Broughty Ferry
1891 Pattullo, John, Hatton Mill, Friockheim
1884 Petrie, David D., Friockheim, Arbroath
1891 RAMSAY, Hon. Charles Maule, Brechin Castle, Brechin
1882 Robertson, James, Panmure, Carnoustie
1884 Rodger, Geo., Waulkmills, Inverkeillor, Arbroath
1882 Rodger, Robt., jun., Mains of Dun, Montrose
1894 Rodger, John Laurie, Nether Careston, Brechin
1895 Samson, James, Balmyllo, Montrose
1895 Samson, Jas., jun., Balmyllo, Montrose
1866 Scott, D. G. C., Maisondieu, Brechin
1883 Scott, Jas. Addison, Newton, Arbirlot, Arbroath
1883 Scott, William, Pitforthie, Brechin
1883 Shepherd, John, Lundie, Brechin
1883 Shield, J. T., Redcastle, Arbroath
1885 Shiell, John, Solicitor, Brechin

Admitted
1895 Smith, A. Rae, Law of Craigo, Montrose
1884 Soutar, D., Powis, Montrose
1850†Southesk, The Earl of, K.T., Kinnaird Castle, Brechin
1880 Stansfeld, Capt. John, Dunninald, Montrose
1894 Swan, Wm. C., Inverpeffer, Carnoustie
1890 Taylor, Robt., Pitlivie, Carlogie House, Carnoustie
1876 Vallentine, George, 55 Southesk Street, Brechin
1894 Watson, William, Boddin, Montrose
1894 Wemyss, Dr John W., Broughty Ferry
1874 Wood, Chris., Kintrockat House, Brechin
1884 Young, George, Panlathie, Carnoustie
1895 Young, James, Fordhouse, Montrose

KINCARDINE.

1876 Adam, William, Bush, Banchory-Ternan
1857 Anderson, Wm., Hattonburn, Banchory
1894 Annandale, A. B., Bank Agent, Stonehaven
1881 Baird, Sir Alex., of Urie, Bart., Stonehaven
1894 Baird, Henry Robert, of Durris, Aberdeen
1892 Barrie, James, Butcher, Stonehaven
1884 Braid, Thomas, Durris, Aberdeen
1895 Brown, Alex. G., Durris Estate Office, Aberdeen
1893 Brown, Geo. T., East Cairnbeg, Fordoun
1873 Brown, W., Pitnamoon, Laurencekirk
1894 Bruce, Alex., Mill Inn House, Stonehaven
1894 Calder, Jas., Midtown of Barras, Stonehaven
1858 Calder, R., Raemoir, Banchory-Ternan
1894 Carr, Wm., East Mains of Barras, Stonehaven
1888 Chapman, Alexander, Mains of Garioch, Laurencekirk
1871 Clinton, Right Hon. Lord, Fettercairn House, Fettercairn
1884 Cooper, John, Ley, Banchory-Ternan
1892 Cowie, James, Westfield, Stonehaven
1893 Crichton, William, Castleton of Kincardine, Laurencekirk
1864 Davidson, J., Harestone, Banchory
1876 Dickson, Patrick, Laurencekirk
1894 Don, Jas., Auquhirie, Stonehaven
1896 Duff, Robert W., of Fetteresso, Stonehaven
1873 Falconer, Wm., Cairnton, Fordoun
1897 Findlay, John M., Clochanhill, Stonehaven
1894 Forrest, Jas., Westerton, Bridge of Dee
1894 Forrest, Wm., Abbotswell, Kincorth, Nigg
1873 Fortescue, Archer, of Kingcausie, Aberdeen
1891 Gammell, Sydney James, yr. of Drumtochty, Fordoun
1876 Gladstone, Sir J. R., of Fasque, Bart., Fettercairn
1869 Grant, Capt. Frederick G. Forsyth, of Ecclesgreig, Montrose
1873 Greig, James Booth, Laurencekirk
1884 Greig, William, Ashentilly, Durris, Aberdeen
1884 Hart, John, Cowie House, Stonehaven
1878 Hay, J. T., of Blackhall Castle, Banchory
1895 Henderson, James, Cheyne, Stonehaven
1896 Hird, Samuel, Sauchenshaw, Muchalls, Stonehaven
1884 Hunter, George, Kirktown of Banchory, Banchory-Ternan
1888 Innes, Rev. W. D., of Cowie, Stonehaven
1873 Kinnear, Arthur W., Stonehaven
1876 Kinross, J., Coldstream, Laurencekirk
1876 Kintore, Right Hon. The Earl of, Inglismaldie, Laurencekirk
1876 Littlejohn, William, Easter Tulloch, Stonehaven
1894 M'Gregor, Geo., Mills of Cowie, Stonehaven
1896 M'Inroy, Col. Charles, of The Burn, Edzell
1893 Martin, James, sen., Farrochie, Stonehaven
1894 Milne, Jas., Balnagubs, Netherley, Muchalls
1894 Milne, James, jun., Easter Cairnhill, Fetteresso, Muchalls
1894 Murray, A. B., Auction Mart, Stonehaven
1885 Murray, J. J., Factor, Fasque, Fettercairn
1894 Myles, John Blythe, Pitcarry, Bervie
1857 Nicholson, J. Badenach, of Glenbervie, Fordoun
1855 Paul, William, Stranathro Cottage, Muchalls
1863 Pearson, David A., Johnston Lodge, Laurencekirk
1894 Peat, Wm., Westerton, Laurencekirk
1885 Philip, Forbes, Tullos Home Farm, Nigg, Aberdeen
1878 Porteous, D. S., of Lauriston, Montrose
1885 Ross, Alexander, Mains of Newhall, Fetteresso, Muchalls
1859 Scott, Hercules, of Brotherton, Johnshaven
1882 Shand, T. L. R., of Fawsyde, Bervie
1894 Shaw, Charles, Maidenfold, Maryculter
1863 Sinclair, D., of North Loirston, Aberdeen
1876 Skeen, Geo., Meikle Fiddes, Drumlithie
1895 Smith, E. G., Woodbine, Stonehaven
1873 Smith, James, Pittengardner, Fordoun
1873 Smith, John, Balmain, Fettercairn
1868 Smith, W., New Mains of Urie, Stonehaven
1868 Smith, W., of Benholm, Johnshaven
1892 Stephen, David K., Commieston, Montrose
1893 Stewart, George, Haulkerton Mains, Laurencekirk
1858 Taylor, Geo., of Kirktonhill, Montrose
1893 Taylor, John, Uras, Stonehaven
1857 Taylor, Robert, Drumfrenny, Banchory
1891 Thom, James H., Westerton of Stracathro, Brechin
1894 Thomson, Geo., Tomacoile, Banchory
1868 Thomson, James, Balbegno, Fettercairn
1888 Thomson, W. J. Sandford, Balmanno, Laurencekirk
1888 Trefusis, Hon. Chas. S. Forbes, Fettercairn House, Fettercairn
1863†Walker, G. J., Mains, Portlethen, Aberdeen
1893 Walker, John Wilson, Hillside House, Portlethen, Aberdeen
1892 Walker, Robt. W., Portlethen, Aberdeen
1896 Young, John, Rothnick, Muchalls, Stonehaven

6.—DUMFRIES DISTRICT.

EMBRACING THE

COUNTIES OF DUMFRIES, KIRKCUDBRIGHT, AND WIGTOWN.

DUMFRIES.

Admitted
1895 Adamson, Robert, W.S., Irish Street, Dumfries
1879 Aitken, John M., Norwood, Lockerbie—*Free Life Member*
1892 Allan, Alex. Y., Croft Jane, Thornhill
1883 Allan, Wm., 22 High Street, Dumfries
1893 Allison, Colonel William Henry, Park End, Lockerbie
1893 Allison, Hubert, Park End, Lockerbie
1895 Anderson, Walter, Hazelbank, Beattock
1895 Armstrong, John, Palmerston House, Dumfries
1884 Armstrong, John S., Lochside, Dumfries
1895 Austin, James, Kilblain, Caerlaverock, Dumfriesshire
1887 Austin, James J. M., of Dalmakerran, Tynron
1880 Austin, William, Bank Agent, Thornhill
1888 Baird, Alex., West Mains, Collin, Dumfries
1895 Baird, Capt. R. Bruce, of Courance, Lockerbie
1870 Baird, John, Hall, Kirkconnel, Sanquhar
1871 Baird, John, Broomhouses, Lockerbie
1895 Barber, William, Tererran, Moniaive
1895 Barbour, Gavin, Hazelbrae, Lochmaben
1895 Beattie, John, Baurch, Annan
1870 Beattie, John, Bulmansknowe, Canonbie
1893 Beattie, Lewis, Mossknowe, Canonbie
1878 Beattie, William J. P., Hope Lodge, Moffat
1868 Bell, Alexander, Stobahill, Lockerbie
1886 Bell, George, Minsca, Lockerbie
1863 Bell, James, Woodslee, Canonbie
1895 Bell, Robt., M.D., Penfillan, Thornhill, Dumfries
1878 Bell, William, Todholes, Annan
1895 Blackley, John, Marchhill, Dumfries
1880 Blacklock, John, Solicitor, Dumfries
1895 Blount, John, Fountainbleau, Dumfries
1878 Borland, John, Auchencairn, Closeburn, Thornhill
1893 Brand, David, Hangingshaw, Lockerbie
1878 Broatch, George, Thwait, Ruthwell
1895 Broatch, Geo., jun., Smallholm, Lockerbie
1879 Brook, Edward, Hoddam Castle, Ecclefechan
1895 Brook, E. J., yr. of Hoddam, Hoddam Castle, Ecclefechan
1895 Brown, David, Banker, Annan
1878 Brown, David, Ellerslie, Kirkmahoe
1860 Brown, James, Newington, Annan
1886 Brown, James, Burnside, Holywood, Dumfries
1895 Brown, Robt., Burnswark, Ecclefechan
1884 Brown, Thomas, Guillyhill, Holywood, Dumfries
1877 Brown, T. M., Closeburn Castle, Thornhill

Admitted
1895 Burnie, Arthur J., Carterton, Lockerbie
1895 Burnie, William, Penlaw, Lockerbie
1895 Burns, C., Norwood Cottage, Lockerbie
1895 Callander, Gavin, Palmerston Iron Works, Dumfries
1895 Campbell, John, Knockenjig, Sanquhar
1865 Campbell, Lieut.-Col. A. H., Kirkland, Thornhill
1893 Carlyle, William Lee, Waterbeck, Ecclefechan
1886 Carmont, James, British Linen Company Bank, Dumfries
1896 Carruthers, F. J., of Dormont, Lockerbie
1893 Carruthers, Frank James Chambers, of Dixons, Lockerbie
1854 Carruthers, John, of Miln, Wamphray, Moffat
1870 Carruthers, Jn., Tundergarth, Lockerbie
1876 Carruthers, Joseph, Annan Bank, Moffat
1882 Carruthers, Joseph, Solicitor, Moffat
1870 Carruthers, R. B., Huntingdon Lodge, Dumfries
1895 Carruthers, William, Balgray Farm, Lockerbie
1895 Carruthers, Wm. B., Stenrieshill, Moffat
1895 Caven, James, Snade, Auldgirth
1876 Caven, Thos., Birkshaw, Glencairn, Dunscore
1876 Charlton, John, Corn Merchant, Dumfries
1878 Chrystal, William, Gilchristland, Thornhill
1895 Common, John, Cross Dykes, Lockerbie
1878 Connell, J. W. F., of Auchencheyne, Thornhill
1878 Cormack, John F., Solicitor, Lockerbie
1886 Craig, Alex., Hunter's Lodge, Thornhill
1897 Craig, James, Bankhead, Kirkmahoe, Dumfries
1859 Craig, Wm., Laurel Bank, Dumfries
1881 Crawford, Jas., Floshend, Gretna
1892 Crawford, Peter, Dargavel, Dumfries
1895 Crawford, Wm., Carruchan, Dumfries
1870 Critchley, J. A., Stapleton Tower, Annan
1895 Cumming, John, Clothier, Buccleuch Street, Dumfries
1892 Dalgleish, John Smith, Auctioneer, Lockerbie
1895 Dalgleish, Robert, Auchentaggart, Sanquhar
1878 Dalziel, Adam, Chanlockfoot, Penpont
1869 Dalziel, James, Auctioneer, Dumfries
1878 Dalziel, Robert, Druidhall, Penpont
1895 Dickie, Joseph, South Cowshaw, Tinwald, Lochmaben
1884 Dickson, George, Braehead, Collin, Dumfries
1862 Dickson, John H., Dabton, Thornhill
1860 Dickson, T., Eccles, Thornhill
1878 Dobie, David, Banker, Lockerbie

Admitted
1868 Douglas, A. H. Johnstone, Comlongan Castle, Ruthwell, R.S.O.
1882 Douglas, J., Breconside, Thornhill
1895 Douglas, William, Maryfield, Terregles, Dumfries
1893 Duncan, John Bryce, Newlands, Dumfries
1895 Edgar, James, Annfield, Amisfield, Dumfries
1895 Edgar, Joseph, Killyleoch, Dunscore
1884 Edmondson, James H., of Riddingwood, Amisfield, Dumfries
1893 Elliot, William, Westwater, Langholm
1874 Erskine, Henry, 16 Henry Street, Langholm—*Free Life Member*
1895 Erskine, Robert, Gladenholm, Parkgate, Dumfries
1895 Ewart, John, Cleuchbrae, Johnstone, Lockerbie
1860 Farish, Samuel, Kirkland, Lockerbie
1877 Farish, Samuel T., Kirkland, Lockerbie
1877 Farish, William B., Tinwald Parks, Dumfries
1878 Fleming, Gavin, Crowdie Knowe, Ecclefechan
1884 Fletcher, D. M., Dunnabie, Ecclefechan
1895 French, John, Glenmenna, Thornhill
1895 Fulton, Arch., Tinwald House, Torthorwald, Dumfries
1895 Gass, Thomas, Howgillside, Kirkpatrick-Fleming, Ecclefechan
1895 Gibson, Richard, Bogge, Penpont
1882 Gillespie, Denholm, 6 Marchbank Terrace, Dumfries
1873†Gillespie, Rev. John, Mouswald Manse, Ruthwell, R.S.O.
1884 Gillespie, William, Alton, Moffat
1895 Glover, Bailie Joseph J., Hazelwood, Maxwelltown, Dumfries
1860 Gordon, Henry, Moatbrae, Dumfries
1895 Gordon, H. S., Solicitor, Dumfries
1895 Gourlay, Francis, N. M., Twomerkland, Moniaive
1893 Graham, Christopher, Skipmyre, Lochmaben
1884 Graham, Major-General John Gordon, of Wyseby, Ecclefechan
1895 Graham, William, Harlawhill, Canonbie
1895 Graham, William, Hallhills, Lockerbie
1859 Gray, Alex., Tanlawhill, Langholm
1880 GRIERSON, Sir A. D., of Lagg, Bart., Dumfries
1895 Grierson, John, Town Clerk, Dumfries
1872 Grieve, Archd., Albierigg, Canonbie
1896 Grossart, Robert F., M.R.C.V.S., Corriehill, Lockerbie
1895 Haddow, Thos. R., Merkland, Penpont
1891 Halliday, James, Slieucairn, Annan
1894 Halliday, Peter, Summerlee, Moffat
1895 Hamilton, James, yr., Cample Bridge, Thornhill
1870 Hamilton, John, Leithen Hall, Beattock
1880 Harkness, W. I., Mitchellslacks, Thornhill
1893 Harper, Robert, Bankhead of Dalswinton, Dumfries
1895 Hatterslay, Neil S., Dalswinton, Dumfries
1892 Hayes, John, Dormont Grange, Lockerbie
1895 Henderson, Jas., Ryemuir, Lochmaben
1895 Henderson, Jas. K., Buttknowe, Kirkconnel
1887 Henderson, John, Solicitor, Dumfries
1883 Hetherington, R. B., Drumcruil, Thornhill
1862 Hewetson, J., Auchenbainzie, Thornhill
1870 Hiddleston, John, Kirkland, Closeburn, Thornhill
1862 Hobkirk, Jas., of Netherwood, Dumfries

Admitted
1895 Holmes, Robert K., Broomrigg, Holywood, Dumfries
1895 Hotson, Ninian Wilson, Hopsrig, Langholm
1884 Howat, John, Lower Netherwood, Dumfries
1895 Hunter, David, Shearington, Caerlaverock, Dumfries
1895 Hunter, James, Hardlawbank, Holywood, Dumfriesshire
1884 Hunter, James, Lochside, Lockerbie
1895 Hunter, Thomas, Birkbush, Dumfries
1886 Hutchison, John, Lovers' Walk, Dumfries
1895 Hyslop, Thomas L., Tower, Sanquhar
1880 Hyslop, Wm., Clenries, Sanquhar
1895 Hyslop, Wm., Morton Holm, Thornhill
1870 Irvine, B., Citra Villa, Lovers' Walk, Dumfries
1895 Irvine, Wm., Job and Postmaster, Dumfries
1895 Irving, David A., Cowburn, Lockerbie
1883 Irving, D. J. Bell, Castlebank, Ecclefechan
1885 Irving, H. C., of Burnfoot, Ecclefechan
1869 Irving, J. Bell, of Whitehill, Lockerbie
1895 Irving, John Bell, Mount Annan, Annan
1872 Irving, Samuel, Carco, Kirkconnel
1895 Irving, Thomas, Grange, Lockerbie
1895 Irving, Thomas, Pearsbyhall, Lockerbie
1895 Irving, Wm., Whitestonehill, Lockerbie
1895 Irving, W. O. Bell, Millbank, Lockerbie
1895 Jackson, James W., Lochhouse, Beattock
1895 Jackson, Thomas, Beattock Farm, Beattock
1895 Jamieson, Robt., Waterhead, Lockerbie
1895 Jardine, David Jardine, Jardine Hall, Lockerbie
1895 Jardine, Robert, Corsua, Lockerbie
1863†JARDINE, Sir Robert, of Castlemilk, Bart., Lockerbie
1893 Jardine, Robert William Buchanan, yr. of Castlemilk, Lockerbie
1896 JARDINE, Sir William, of Applegarth, Bart., Amisfield Tower, Dumfries
1890 Jeffrey, John J., Blackaddie, Sanquhar —*Free Life Member*
1895 Johnston, Archibald F. Campbell, Carnsalloch, Dumfries
1877 Johnston, James, Helenbank, Noblehill, Dumfries
1895 Johnston, John, Kirkhill, Wamphray, Beattock
1895 Johnston, Rev. John A., Dryfesdale Manse, Lockerbie
1859 Johnston, Thomas, Moffat
1878 Johnston, Wm., of Cowhill, Dumfries
1886 Johnstone, Andrew J. S., of Halleaths, Broadholm, Lockerbie
1873 Johnstone, James, Hunterheck, Moffat
1859 Johnstone, John A., Archbank, Moffat
1870 Johnstone, J. J. Hope, of Annandale, Raehills, Lockerbie
1881 Johnstone, Michael, Archbank, Moffat
1895 Joynson, Francis, Murraythwaite, Ecclefechan
1863 Kennedy, David, Old Gretna, Carlisle
1864 Kerr, Abram, Old Graitney, Gretna
1878 Kerr, Archd., Upper Dormont, Lockerbie
1875 Kerr, Jn., Blountfield, Ruthwell, R.S.O.
1893 Keswick, J. J. J., Dormont, Lockerbie
1875 Kirkpatrick, David, Townfoot, Amisfield, Dumfries
1893 Kirkpatrick, James, Townfoot, Amisfield, Tinwald, Dumfries
1870 Kirkpatrick, James, Auctioneer, Annan
1895 Kirkpatrick, Thomas, Byneholm, Penpont, Dumfriesshire
1895 Lang, James, Kelton Grange, Dumfries

Admitted
1895 Lawrie, C. E., Maxwellton House, Moniaive
1895 Lawrie, James, Auction Mart, Dumfries
1884 Lawrie, John P., Shieldhill, Lochmaben
1878 Lennox, David, Merchant, Dumfries
1895 Lennox, James, Merchant, Dumfries
1865 Leny, W. Macalpine, of Dalswinton, Dumfries
1878 Lindsay, James, Whitecastles, Lockerbie
1895 Lindsay, Jas., V.S., Whitesands, Dumfries
1895 Lindsay, Wm., West Roucan, Dumfries
1878 Little, James Church, Burnfoot, Langholm
1884 Little, John Malcolm, Carlesgill, Langholm
1888 Little, Murray, Solicitor, Annan
1895 Little, William, Rivox, Moffat
1895 Lorimer, William, Raecleugh, Moffat
1895 Lyon, J. Stewart, of Kirkmichael, Dumfries
1870 Lyon, Thomas A., Lovers' Walk, Dumfries
1887 M'Call, Alexander, Rock Hall Mains, Collin, Dumfries
1870 M'Call, James, of Caitloch, Moniaive
1895 M'Call, William N., Caitloch, Glencairn, Moniaive
1878 M'Clure, Wm., Banker, Lockerbie
1882 MacCowan, A., of Newtonairds, Holywood
1888 M'Creath, John, Comlongan Mains, Ruthwell, R.S.O.
1893 M'Crone, Wm., Castlemilktown, Lockerbie
1887 Macdonald, Alexander, Grain Merchant, Lockerbie
1895 Macdonald, J. C. R., W.S., Dumfries
1893 Macdonald, Major William Bell, of Rammerscales, Lockerbie
1878 Macfarlan, George, Closeburn Mains, Thornhill
1885 M'Gibbon, James R., Union Bank, Moffat
1860 M'Gill, James, Banker, Dumfries
1886 M'Intosh, A. J., V.S., Dumfries
1895 M'Intosh, John S., Drummuir, Torthorwald, Dumfries
1887 M'Jannet, F. J., Gateslack, Thornhill
1888 M'Jerrow, David, Solicitor, Lockerbie
1894 M'Jerrow, Jas. Ewart, Fairfield, Lockerbie
1878 Mackay, D., Greenfield, Kirkpatrick, Ecclefechan
1880 Mackenzie, John A., Solicitor, Lockerbie
1879 M'Kenzie, Neil, Holestane, Thornhill
1895 Mackie, Andrew, Aitchisons Bank, Gretna
1895 Mackie, George, Dornock Mains, Annan
1895 Mackie, William, Wamphray Gate, Beattock
1895 M'Leod, William, Bank Street, Dumfries
1895 M'Millan, John J., Glencrosh, Moniaive
1895 M'Millan, Robert, Glencrosh, Moniaive
1895 M'Millan, Samuel, Bank of Scotland, Moffat
1895 M'Millan, Thomas, Glencrosh, Moniaive
1895 M'Murray, Alex., Catherinefield, Dumfries
1886 M'Nae, Robert, V.S., Dumfries
1895 M'Queen, Wm., Broomfield, Sanquhar
1895 Macrae, D. M., Stenhouse, Thornhill
1840 Malcolm, W. E., of Burnfoot, Langholm
1880 Martin, William, Dardarroch, Dumfries —*Free Life Member*
1896 Maxwell, Alex., of Barncleugh, Dumfries
1889 Maxwell, Chas. H., Dalruskin, Dumfries
1878 Maxwell, George, of Broomholm, Langholm
1882 Maxwell, Joseph, Seedsman, Thornhill

Admitted
1895 Maxwell, M'Kill, Coshogle, Thornhill
1895 Maxwell, William, Chemical Manufacturer, Bellone, Dumfries
1895 Maxwell, Wm. H., High Street, Dumfries
1896 Millar, William J., Engineer, Annan
1886 Millar, Wm., Lakehead, Closeburn, Thornhill
1895 Milligan, Geo. F., Burnmouth, Thornhill
1878 Milligan, James, Hayfield, Thornhill
1870 Milligan, John, Auldgirth, Dumfries
1895 Milligan, John, Crairie Park, Durrisdeer, Dumfries
1886 Milne, Thomas, Grain Merchant, Lockerbie
1870 Minto, John D., Dumfries
1895 Moffat, Francis, Craigbeck, Moffat
1893 Moffat, James, Gateside, Sanquhar
1862 Moffat, Thomas, Sunnyhill, Dumfries
1883 Moffat, Wm., Garwald, Langholm
1895 Moffat, Wm. Kennedy, of Shillingland, Sunnyhill, Auldgirth, Dumfries
1878 Monilaws, Rev. James J., Middlebie Manse, Ecclefechan
1878 Murray, Allan, Castlemilk Mill, Lockerbie
1895 Murray, John, Cleughside, Lockerbie
1895 Murray, William, British Linen Co. Bank, Sanquhar
1886 Newbigging, Thos. Kennedy, Nurseryman, Dumfries
1895 Osborne, James, Dinning Farm, Closeburn, Dumfries
1890 Osborne, Robert, Wynholm, Lockerbie
1895 Osselton, Chris., County Sanitary Inspector, Nunholm, Dumfries
1895 Park, John, Relief, Ecclefechan
1893 Park, Robert, Factor, Dryfesdalegate, Lockerbie
1889 Paterson, Francis, Clerkhill, Langholm
1895 Paterson, John, Fingland, Wamphray, Moffat
1885 Paterson, John S., Craigdarroch, Sanquhar
1854 Paterson, J. W. J., Terrona, Langholm
1884 Paterson, Robert, of Robgill Tower, Ecclefechan
1885 Paterson, Wm., E. Craigdarroch, Sanquhar
1886 Paterson, Wm., Rock Hall, Dumfries
1884 Pearson, A. G., of Luce, Annan
1893 Pender, James, Morton Mains, Thornhill
1884 Primrose, John, Solicitor, Dumfries
1895 Primrose, Robert, Kirkbog, Thornhill
1869 QUEENSBERRY, The Marquis of, Glen Stuart, Annan
1884 Rain, Rev. Thos., Hutton Manse, Lockerbie
1874 Ranken, John S., Lawesknowe, Moffat
1895 Rankin, John S., Waulkmill, Thornhill
1886 Rannie, D. W., of Conheath, Dumfries
1895 Reid, James S., Barr, Sanquhar
1895 Reid, Walter, Corsebank, Sanquhar
1895 Richardson, D. B., Haregills, Ecclefechan
1895 Richardson, James, Cotland, Torthorwald, Dumfries
1884 Richardson, John, Braehead, Heck, Lockerbie
1878 Richardson, William, Milnfield, Annan
1884 Richardson, Wm., Cotland, Dumfries
1895 Richardson, Wm., Milton, Beattock, N.B.
1895 Robinson, R., Steam Mills, Annan
1893 Robson, John, County Buildings, Dumfries
1884 Roddick, Frank, Trailtrow, Ecclefechan
1895 Rogerson, Robert, Seedsman, Dumfries
1895 Rogerson, Samuel, Boreland, Lockerbie
1894 Rome, H. F., High Street, Annan
1895 Rutherford, Dr James, Crichton Royal Institution, Dumfries

Admitted
1895 Rutherford, John, M.P., Summerhill, Annan
1884 Sandilands, Robt., Corsebank, Sanquhar
1893 Scott, Chas. C., Breconside, Moffat
1878 Scott, Robert A., Kirkbank, Dumfries
1893 Scott, William Black, Ashley Bank, Langholm
1877 Semple, Wm., Mouswald Banks, Ruthwell, R.S.O.
1895 Shortt, Col. W., Fairfield, Dumfries
1878 Sloan, James, Coachbuilder, Dumfries
1883 Sloan, Hugh, Gillenbie, Lockerbie
1895 Sloan, William, Shawsmuir, Closeburn, Thornhill
1895 Smith, Geo., Hope Cottage, Ruthwell
1895 Smith, Matthew, Townhead, Thornhill
1877 Smith, Robert, Dalfibble, Dumfries
1870 Smith, Thomas, Twiglees, Lockerbie
1895 Steel, Arthur Jackson, of Kirkwood, Lockerbie
1895 Steel, James, Pennyland, Dalswinton, Dumfries
1859 Steuart, Patrick, Middlegill, Moffat
1860 Stewart, Peter, Dornock Mains, Annan
1886 Stobo, James, Halliday Hill, Auldgirth
1878 Struthers, Wm., Logan Mains, Canonbie
1886 Symons, John, Solicitor, Dumfries
1896 Taylor, John, Gateside, Wamphray, Beattock
1878 Thompson, Alexander, Ironmonger, Dumfries
1878 Thomson, William, M'Cheynston, Auldgirth
1878 Todd, Alex., Wyseby Mains, Ecclefechan
1895 Tyre, W. L., Maqueston, Tynron, Dumfries
1890 Underwood, Wm., Ironmonger, Annan
1893 Veitch, W. H., Park House, Ecclefechan
1873†Villiers, F. E., Closeburn Hall, Thornhill
1894 Vivers, William, Dornocktown, Annan
1858 Walker, Sir George G., of Crawfordton, Thornhill
1895 Walker, Captain Laurie, Iarbruck, Thornhill
1895 Walker, Graham W., Auchencairn, Closeburn, Dumfries
1886 Wallace, James R. W., Auchenbrack, Thornhill
1889 Wallace, John William, Wallace Hall, Auldgirth
1885 Wallace, William, of Whitewoollen, Lockerbie
1875 Waugh, John, Granton, Moffat
1895 Waugh, R. B., Shillahill, Lockerbie
1886 Whitelaw, James W., Solicitor, Dumfries
1895 Wightman, Jas., South Mains, Sanquhar
1869 Wightman, John Seton, of Courance, Lockerbie
1896 Will, George, Crichton Royal Institution, Dumfries
1895 Williamson, Ninian Alex., of Carzield, Kirkmahoe, Dumfries
1895 Williamson, Robt., Carse Mains, Auldgirth
1895 Wilson, Alex., Stakeford, Dumfries
1895 Wilson, James, 146 High St., Dumfries
1870 Wilson, James R., Banker, Sanquhar
1878 Wilson, John, Tinwaldshaws, Tinwald, Dumfries
1895 Wilson, John, Boghead, Collin, Dumfries
1878 Wilson, P. M'C., Nether Gribton, Dumfries
1877 Wright, Thomas, Bengall, Lockerbie
1895 Wyllie, James, Grain Merchant, 3 Loreburn Park, Dumfries
1864 Yorstoun, M. C., of Tinwald, Irvine House, Canonbie
1895 Young, Homer, Redhills, Dumfries
1896 Young, H. S. M., Carronhill, Thornhill
1891 Young, John, Moffat

KIRKCUDBRIGHT.

Admitted
1889 Adamson, John, of Craigadam, Dalbeattie
1895 Allan, Robert, Howwell, Kirkcudbright
1870 Anderson, Robert, Alleyford, Kirkgunzeon
1895 Armstrong, John, Culquhan, Ringford, Castle-Douglas
1895 Austin, Robt., Ladyland, Kirkbean, Dumfries
1889 Barbour, Wm., Troquhain, New Galloway
1895 Barclay, Wm. M'C., Mark, Twynholm, N.B.
1884 Barrowman, John H., Caigton, Castle-Douglas
1871 Bell, William, of Gribdae, Kirkcudbright
1878 Berwick, John, Whiteside, Kirkgunzeon
1878 Biggar, James, Grange Farm, Dalbeattie
1858 Biggar, Thos., of Chapelton, Dalbeattie
1886 Biggar, Wm., Chapelton, Dalbeattie
1886 Blackett, Lieut.-Col. C. E., of Arbigland, Dumfries
1895 Blair, James Edward, Drumpark Mains, Dumfries
1870 Brown, Joseph, Hermitage, Dalbeattie
1861 Brown, Oliphant, Dalry, Galloway
1895 Brown, Robert, Hermitage, Urr, Dalbeattie
1895 Brown, William, Balannan, Ringford, N.B.
1864 Brydon, James, Nether Ervie, Parton, Castle-Douglas
1892 Caird, James A., of Cassencary, Creetown
1895 Callander, Alex., Palmerston Saw Mills, Maxwelltown, Dumfries
1895 Callander, Samuel, Clunie, Terregles, Dumfries
1885 Campbell, Robert J., Cuil, Castle-Douglas—*Free Life Member*
1888 Campbell, Thomas, V.S., Kirkcudbright
1879 Cannon, James, Urioch, Castle-Douglas —*Free Life Member*
1877 Cannon, John, Rosebank, Dalbeattie
1896 Carson, And., Newfield, Dalry, Galloway
1874 Chalmers, Archd., of Kipp, Dalbeattie
1884 Clark, Samuel T., Netherthird, Castle-Douglas
1895 Clark, William, Culmain, Crocketford, Dumfries
1890 Cliff-M'Culloch, Edward A., Kirkclaugh, Gatehouse
1896 Copland, Thomas, Seeside, Terregles, Dumfries
1860 Corrie, Adam, South Park, Kirkcudbright
1860 Craig, Joseph, of Threecrofts, Lochrutton, Dumfries
1878 Craik, Geo., Argrennan Mains, Tongland
1872 Cranston, Jas., Rotchell Park, Dumfries
1894 Crawford, Hugh W. B., Hall of Auchencairn, Castle-Douglas
1866 Cuninghame, R. D. B., of Hensol, Castle-Douglas
1864 Cunningham, Jas., Tarbreoch, Dalbeattie
1889 Cunningham, John, Durhamhill, Dalbeattie
1879 Currie, John, Kirkeoch, Kirkcudbright
1895 Douglas, John, Barstibly, Castle-Douglas
1895 Douglas, Thomas, Lochdougan, Castle-Douglas
1878 Douglas, Wm. D. R., of Orchardton, Castle-Douglas
1877 Dudgeon, R. F., of Cargen, The Grange, Kirkcudbright
1889 Duncan, James, East Glenarm, Crocketford, Dumfries
1884 Dunlop, Captain H. L. Murray, of Corsock, Dalbeattie

Admitted
1871 Dunlop, Robert, Dryburgh, Castle-Douglas
1895 Ferguson, J., Crochmore, Dumfries
1889 Fergusson, Robert W., of Kilquhanity, Dalbeattie
1895 Fraser, Hugh, Glaisters, Corsock, Dalbeattie
1895 Fraser, T. W. M., Glensone, Southwick, Dumfries
1859 Frazer, John, Maxwellfield, New Abbey, Dumfries
1860 Gibson, J. T., Tullowquhairn, Kirkbean
1895 Gifford, John, Ingleston, Twynholm, R.S.O., N.B.
1888 Gillespie, William, Solicitor, Castle-Douglas
1886 Gilmour, W. P., Balmangan, Kirkcudbright
1886 Gordon, Alexander J., Kirkcudbright
1885 Gordon, Edward, Keltonhill, Castle-Douglas
1877 Gordon, James, Castle-Douglas
1879 GORDON, Sir William, of Earlston, Bart., Kirkcudbright
1895 Graham, Robert, Kirkconnel, Ringford, N.B.
1878 Gray, Adam, Ingleston of Borgue, Kirkcudbright
1859 Grierson, Wm., 41 Queen Street, Castle-Douglas
1896 Halliday, William, Halketleaths, Castle-Douglas
1876 Hayman, John, Queenshill, Ringford
1878†HERRIES, Right Hon. Lord, Kinharvey, New Abbey
1853 Herries, A. Y., of Spottes (16 Heriot Row, Edinburgh), Dalbeattie
1895 Herries, William D. Y., yr. of Spottes, Dalbeattie
1895 Hewitt, Hon. William James, Rosebank, Gatehouse, N.B.
1878 Hood, David A., Balgreddan, Kirkcudbright
1884 Hood, Wm., Chapelton, Borgue
1886 Hope, John, Captain R.N., St Mary's Isle, Kirkcudbright
1878 Houston, John, The Hill, Castle-Douglas
1895 Howat, Andrew, Burnside of Mabie, Troqueer, Dumfries
1886 Hughan, Major Henry H., of Airds, Parton, N.B.
1880 Hutchison, Graham, of Balmaghie, Castle-Douglas
1879 Hutchison, J. W., of Edinghame, Castle-Douglas
1870 Hyslop, And., Auchenreoch, Dalbeattie
1895 Hyslop, Peter, Tregallon, Dumfries
1886 Jamieson, John, Jameston House, Carsphairn
1871 Kay, D. J., of Drumpark, Dumfries
1878 Kennedy, J. M., of Knocknalling, Dalry, Galloway
1890 Kerr, Jas., Mid-Kelton, Castle-Douglas —*Free Life Member*
1860 Kerr, Thos., Kirkchrist, Kirkcudbright
1892 Kirkpatrick, Andrew, Auchengibbert, Crocketford
1891 Kirwan, Major Wm. F. Maitland, of Gelston, Castle-Douglas
1878 Kirwan, L. M., Collin, Auchencairn
1848 Laurie, W. K., of Woodhall, Castle-Douglas
1895 Lorraine, Dr Walter, Castle-Douglas
1895 Lusk, Matthew C., Airieland, Castle-Douglas
1870 M‘Call, George, Cassalands House, Maxwelltown, Dumfries
1878 M‘Conchie, John, Carsewilloch, Creetown
1878 M‘Cormick, John, Lochenkit, Corsock, Dalbeattie

Admitted
.895 M‘Cutcheon, Alex., Murrayton, Gatehouse, N.B.
.895 M‘Dowall, John, Girdstingwood, Kirkcudbright
876 MacKerrow, M. S., Boreland of Southwick, Dumfries
.878 M‘Kie, John, of Bargaly, Castle-Douglas
.882 Mackie, John Gladstone, of Auchencairn, Castle-Douglas
.878 M‘Kinnel, William, Butterhole, Dalbeattie
.876 M‘Larin, Dugald, Dalbeattie
.879 M‘Nab, R. W., Banker, Dalbeattie
895 M‘Naught, Robt. A., Dalry, Galloway
.897 M‘Queen, James, of Crofts, Dalbeattie
.876 M‘Taggart, John, Culnaightry, Castle-Douglas
.878 M‘Turk, W. A., Barlae, Dalry, Galloway
1888 M‘William, John, Carantyne Villa, Dalbeattie
1877 Maitland, David, of Dundrennan, Kirkcudbright
1885 Marshall, Wm., Loch Fergus, Kirkcudbright
78 Maxwell, James, Screel, Castle-Douglas
1867 Maxwell, Maxwell Hyslop, of The Grove, Dumfries
1878 Maxwell, W. J., Terregles Banks, Dumfries
1879 Maxwell, Wellwood, of Kirkennan, Dalbeattie
1839†Maxwell, Wellwood H., of Munches, Dalbeattie
1886 MAXWELL, Sir W. F., of Cardoness, Bart., Gatehouse
1873 Maxwell, W. J., yr. of Munches, Terraughtie, Dumfries
1895 Miller, William, Powillimount, Kirkbean, Dumfries
1893 Milligan, J. M., Waterside, New Galloway
1878 Mitchell, Andrew, Barcheskie, Kirkcudbright
1878 Montgomery, And., of Netherhall, Castle-Douglas
1879 Montgomery, John, Comstonend, Twynholm
1878 Montgomery, William, Banks, Kirkcudbright
1893 Morton, David, Cally, Gatehouse
1878 Muir, Jas., Castle Street, Kirkcudbright
1877 Muir, Wm., Craigville, Kirkcudbright
1879 Murray, B. R., of Parton, Castle-Douglas
1879 Murray, G. R., yr. of Parton, Castle-Douglas
1895 Neilson, John, of Mollance, Castle-Douglas
1890 Nicholson, William, Bombie, Kirkcudbright
1873 Nivison, Stewart, Lairdlaugh, Dalbeattie
1878 Ovens, Walter, Torr House, Castle-Douglas
1870 Paterson, D. J., Dumfries
1895 Paton, Robert, Auchenlarie, Gatehouse
1895 Phillips, James, Carse, Kirkcudbright
1889 Picken, David L., Milton, Kirkcudbright
1892 Pilkington, L., Cavens, Dumfries
1896 Pott, Captain A. D. R., of Todrig, Newton, Dumfries
1883 Rae, William, Halldykes, Rotchell Park, Dumfries
1894 Russell, Wm., Barend, Castle-Douglas
1895 Scott, Robert T., Drumhumphry, Corsock, Dalbeattie
1883 Shennan, John K., Balig, Kirkcudbright
1883 Shennan, R., Balig, Kirkcudbright
1895 Sibbald, William R., Torkatrine, Dalbeattie

Admitted
1857 Skirving, Adam, of Croys, Dalbeattie
1882 Smith, Jas., Standingstone, Twynholm, Castle-Douglas
1877 Spalding, A. F. M., of Holm, New Galloway
1895 Sproat, Geo. G. B., High Creoch, Gatehouse, N.B.
1870 Sproat, R., Lennox Plunton, Kirkcudbright
1878 Sproat, W. T., Borgue House, Kirkcudbright
1895 Starke, James Gibson Hamilton, Advocate, of Troqueer Holm, Dumfries
1857 Stewart, H. G. Murray, of Broughton, Gatehouse
1886 Stewart, Robert, of Culgruff, Crossmichael
1878 Stewart, Captain William, of Shambellie, Dumfries
1868 Symington, G. C., Kirkcarswell, Kirkcudbright
1889 Taylor, James, Meikle Ernambrie, Castle-Douglas
1884 Templeton, Matthew, Dromore, Kirkcudbright
1869 Thomson, John, New Abbey, Dumfries
1869 Thomson, J. S., of Brae, Dumfries
1878 Thomson, Robert, of Brae, Dumfries
1886 Timms, H. A., of Slogarie, New Galloway
1878 Veitch, Andrew, Girthon Kirk, Gatehouse
1895 Veitch, David Young, Low Creoch, Gatehouse, N.B.
1879 Wallace, J., Foundry, Castle-Douglas
1886 Wallace, M. G., Terreglestown, Dumfries
1879 Wallace, R., Foundry, Castle-Douglas
1870 Wallace, R., Langbarns, Kirkcudbright
1895 Wallet, William, Auction Mart, Castle-Douglas
1895 Welsh, J. Hartley, Enrick, Gatehouse, N.B.
1879 Williamson, A., Meikle Spyland, Kirkcudbright
1890 Williamson, Captain Cecil H., Carlingwork, Castle-Douglas
1871 Williamson, Thos., Mansfield, Kirkcudbright
1878 Wylie, Wm., Pleasance of Cargen, Dumfries

WIGTOWN.

1893 Adair, John, Springbank, Stranraer
1893 Agnew, Patrick Alex. Vans, of Sheuchan and Barnbarroch, Whauphill
1875 Agnew, William, Balwherrie, Stranraer
1893 Aitken, Alex., Solicitor, Church Street, Stranraer
1878 Anderson, Charles, Barsalloch, Port William
1893 Anderson, John, Anabaglish, Kirkcowan
1893 Anderson, John, Drummoral, Isle of Whithorn
1864 Anderson, Peter, King's Arms Hotel, Glenluce
1894 Armitage, Arthur Calrow, of Kirroughtree, Newton-Stewart
1893 Baird, William, Kirvennie, Wigtown
1878 Barbour, Robert, Balgowan, Ardwell, Stranraer
1893 Bennoch, James, Sheuchan, Castle-Kennedy
1893 Bennoch, John, Solicitor, Stranraer
1896 Black, John, British Linen Bank Co., Wigtown
1878 Black, Thomas, Craigencrosh, Stranraer
1878 Broadfoot, Peter, West Mains, Kirkinner
1895 Brown, Hugh, Craigland Mains, Kirkcowan

Admitted
1893 Brown, John, Bridgehouse, Sorbie
1891 Cairns, Thomas M., Kildarroch, Kirkcowan, Wigtown
1895 Caldwell, Hugh, Culhorn Parks, Stranraer
1895 Campbell, Henry A., Penninghame House, Newton-Stewart
1890 Campbell, Robert, jun., Craichmore, Stranraer
1893 Christison, James, Barglass, Kirkinner
1893 Clanachan, Robert, Little Genoch, Dunragit
1893 Cochran, George, North Cairn, Kirkcolm
1877 Cochran, Robert, Caldons, Stoneykirk
1893 Cochran, Robert, Portencallie, Kirkcolm
1885 Cochran, William, Auchentibbert, Sandhead, Stranraer
1893 Cochrane, James, Barscarrow, Sandhead
1869 Cowan, George, Mains of Park, Glenluce
1893 Craig, Robert Joseph, Innerwell, Garlieston
1895 Crawford, Archibald, Broughton Mains, Sorbie
1895 Crawford, John, Kilbreen, Stranraer
1895 Douglas, John, Balker, Castle-Kennedy
1870 Drew, James, of Craigencallie, Newton-Stewart
1893 Drew, James Lawson, Dranandow, Newton-Stewart
1893 Fergusson, James, Back-of-Wall, Glenluce
1893 Findlay, Francis, Farmer, Appleby, Glasserton
1893 Findlay, Francis, Cutcloy, Isle of Whithorn
1878 Forsyth, John, Reiffer Park, Sorbie
1896 Fraser, Miss Margaret N., Isle Farm, Whithorn —*Free Life Member*
1857 Frederick, D., of Gass, Stranraer
1869 Frederick, Robt., Drumflower, Dunragit
1877 Frederick, Thomas, Cairnhandy, Stoneykirk
1895 French, John M., Larg, Newton-Stewart
1860†GALLOWAY, Right Hon. The Earl of, Galloway House, Garlieston
1893 Gibson, William, Broch, Stranraer
1871 Gourlay, R C., Arbrack, Whithorn
1880 Greig, T. C., Rephad, Stranraer
1878 Hardie, J., jun., Mull of Galloway, Stranraer
1893 Haswell, Robert, Challochmurr, Glenluce
1848 HAY, Sir J. C. D., of Park Place, Bart., Glenluce
1895 Hewetson, John, Baltersan, Newton-Stewart
1895 Hewetson, Robert, Baltersan, Newton-Stewart
1877 Hughan, Peter H., Cults, Whithorn
1885 Hunter, James, Culgroat, Stranraer
1895 Hunter, Stephen, jr., Whiteleys, Stranraer
1888 Hunter, Wm., Garthland Mains, Stranraer
1895 Hutchison, John, Low Drummore, Kirkmaiden
1893 Kerr, George, Solicitor, Newton-Stewart
1893 Kerr, Hugh, West Galdenoch, Stoneykirk
1893 Kerr, Thomas, Banker, Newton-Stewart
1895 Kirkpatrick, Joseph, Buchan, Newton-Stewart
1867 Lang, Alex., Boreland, Glenluce
1895 Lennox, Thomas, New Milns, Wigtown
1878 Lockhart, James, Mains of Airies, Stranraer
1878 Logan, David, Fernbank, Stranraer
1877 Lusk, Peter, Craigcaffie, Stranraer

Admitted
1895 M'Caig, James M'Meekan, Barnalloch, Lochans, Stranraer
1888 M'Caig, John, Challoch, Leswalt, Stranraer
1887 M'Caig, John, High Mye, Stoneykirk
1893 M'Caig, R. Stewart, Kilhilt, Stranraer
1875 M'Camon, John, Kirronrae, Stranraer
1892 M'Clean, James, Auchneal, Stranraer
1892 M'Clelland, And., Glenturk, Wigtown
1878 M'Clew, David A., Chapel Rossan, Stranraer
1878 M'Conchie, A., Mains of Penninghame, Newton-Stewart
1895 M'Conchie, John, Mains of Penninghame, Newton-Stewart
1893 M'Connel, James, Boreland, Whauphill
1857 M'Connell, J. A., Chapelheron, Whithorn
1878 M'Connell, Thomas M., V.S., Wigtown
1882 M'Connell, Wm., Glassnick, Kirkcowan
1877 M'Cosh, Peter, Cairngawn, Kirkmaiden
1884 M'Cracken, Robt., Creamery, Dunragit
1893 M'Creath, Thomas, Skaith, Newton-Stewart
1870 M'Culloch, John, Dinoin, Stranraer
1878 M'Culloch, Peter, Whitefield, Glenluce
1895 M'Culloch, William A., Cardrain, Kirkmaiden
1870 M'Dowall, Andrew, Auchtralure, Stranraer
1878 M'Dowall, R., Auchengallie, Port William
1893 M'Dowall, William Hutcheson, Seedsman, &c., Kirkcowan
1895 M'Dowall, W. R. O. D. Young, Craig Lodge, Glenluce
1895 M'Garva, William, The Cottage, Ardwell, Stranraer
1893 M'Geoch, Thomas, Barncaughlaw, Newton-Stewart
1893 M'Gibbon, William, Ivy House, Stranraer
1893 M'Gill, Andrew, Barsalloch, Wigtown
1893 M'Gill, Andrew, Kildonan, Stoneykirk
1895 M'Gill, John, Grange of Cree, Newton-Stewart
1893 Macgregor, William, V.S., Stranraer
1870 M'Haffie, Wm. J., of Torhousemuir, Wigtown
1871 M'Illraith, Thomas, Barwhanny, Kirkinner
1878 M'Ilwrick, Alex., Quarter, New Luce
1893 M'Keand, Alex. Forsyth, Carseriggan, Kirkcowan
1880 M'Keand, P., Airlies, Whauphill
1893 M'Lean, Charles Arbuthnot, Solicitor, Wigtown
1857 Maclelland, Thos., North Balfern, Kirkinner
1874 M'Master, Allan, Dinvin, Portpatrick
1871 M'Master, Hugh, Blairbuy, Port William
1878 M'Master, James, Carrochtree, Stranraer
1875 M'Master, John, Culhorn Mains, Stranraer
1875 M'Master, William, Challoch, Dunragit
1880 M'Master, Wm., junior, Cruggleton, Garlieston
1895 M'Millan, James, Palgown, Newton-Stewart

Admitted
1893 M'Naught, Alex., Hawthorn, Changue, Port William
1896 Marshall, J., jun., Drummore
1885 Marshall, Mathew, Bridgebank, Stranraer
1893 Mathieson, William, Mindork, Kirkcowan
1878 Matthews, A. B., British Linen Bank, Newton-Stewart
1877 MAXWELL, Sir H. E., of Monreith, Bart., M.P., Whauphill, N.B.
1887 Menzies, W. M., Cults, Castle-Kennedy
1875 Milroy, James, Galdenoch, Stoneykirk
1876 Milroy, John, Balgreggan Mains, Stranraer
1895 Morrison, David, Boreland, Kirkcowan
1895 Morrison, C. Wm., Derry, Kirkcowan
1891 Murray, Alex., Carscreugh, Glenluce
1896 Murray, John, Kilfillan, Glenluce
1893 Murray, William, Borrowmoss, Wigtown
1893 Nicholson, Andrew, Kidsdale, Whithorn
1893 Niven, John F., Mahaar, Kirkcolm
1893 Parlane, John, Craigdhu, Glasserton
1893 Pettigrew, James, Larg, Newton-Stewart
1860 Picken, R., Barnkirk, Newton-Stewart
1885 Ralston, Robert, Milmain, Stoneykirk
1883 Ralston, Wm. H., Culmore, Stranraer
1878 Rankin, Alex., Aird, Stranraer
1893 Robertson, James, Clendrie, Kirkcolm
1895 Ross, Samuel M., Torhousekie, Wigtown
1878 Routledge, C. M., Banker, Port William
1878 Routledge, J. J. F., Old Mill, Port William
1870 Routledge, Wm., Elrig, Port William
1893 Salomon, William Thomas, Cornwall Park, Newton-Stewart
1893 Shaw, David Burnie, Garlieston
1878 Smith, William, Garvarie, Port William
1893 Sprott, Jas., Mains of Dhuloch, Leswalt
1845†STAIR, The Earl of, K.T., Lochinch, Castle-Kennedy Station
1891 Stevenson, Robert, Balcarry, Glenluce
1893 Stevenson, Robert, Glenside, Kirkcolm, Stranraer
1869†STEWART, Sir M. J., of Southwick, Bart., M.P., Ardwell
1846 Stewart, R. H. J., of Physgill and Glasserton, Whithorn
1893 Syminton, Thomas, Solicitor, Glenluce
1893 Taylor, Peter, Inchpark, Stranraer
1893 Templeton, Thomas, Auchinleck, Newton-Stewart
1871 Thompson, Alex., Barmeal, Port William
1893 Thorburn, John, Port-of-Spittle, Stoneykirk
1869 Todd, William, Auchness, Ardwell
1893 Tully, William, Colfin, Stranraer
1890 Wallace, James A., Claycrop, Kirkinner
1887 Watson, Allan Thomson, Genoch, Dunragit
1870 Whyte, James A., Kirkmabreck, Stranraer
1878 Wither, James, Lagganmore, Portpatrick
1894 Wither, Thos., Awkirk, Stranraer
1885 Wright, Hugh, of Alticry, Port William
1860 Young, J. A., Orchardtown, Garlieston
1893 Young, William, Culnoag, Sorbie

7.—INVERNESS DISTRICT.

EMBRACING THE

COUNTIES OF CAITHNESS, ELGIN, INVERNESS, NAIRN, ORKNEY AND SHETLAND, ROSS AND CROMARTY, AND SUTHERLAND.

CAITHNESS.

Admitted	
1874	Adam, Thomas, of Lynegar, Wick
1865	Brims, James, Thurso
1874	Brock, John, Princes Street, Thurso
1892	Brown, George, Watten Mains, Watten
1894	Dunnet, Alex., Upper Gillock, Wick
1894	Ferrier, Jas., Ackergill Mains, Wick
1893	Geddes, Alexander, Implement Maker, Wick
1883	Henderson, David P., of Stemster, Halkirk, N.B.
1874	Henderson, A. W., of Bilbster, Wick
1883	Henderson, Captain J. H., Rosebank, Wick
1881	Horne, Edward Wm., of Stirkoke
1892	Innes, Donald, Borlum, Reay, Thurso
1873	Irvine, G. F., Shrubbery Bank, Thurso
1871	M'Beath, James, Gerston, Thurso
1897	Macdonald, George, Pennyland, Thurso
1897	Macpherson, Charles S. G., Halkirk
1861	Miller, John, of Scrabster, Thurso
1894	Morris, Robt., Reis Lodge, Wick
1881*†	PORTLAND, His Grace The Duke of, Langwell, Wick
1861	Purves, James, Barrogill Mains, Wick
1869	Purves, William, Thurdistoft, Thurso
1884	Robertson, Robert, Implement Maker, Wick
1881	Sandison, M., Hempriggs, Wick—*Free Life Member*
1894	Seton, Robert S., Rampyards, Walten—*Free Life Member*
1892	Sinclair, Alex., Quoys of Reiss, Wick
1857	SINCLAIR, Sir J. G. T., of Ulbster, Bart., Thurso Castle, Thurso
1886	SINCLAIR, Sir John R. G., of Dunbeath, Bart., Barrock House, Wick
1864	SINCLAIR, Sir Robert C., of Stevenson, Bart., Achvarsdale Lodge, Reay, Thurso
1855	Smith, James, of Olrig, Thurso
1876	Sutherland, Alex., Rampyards, Watten—*Free Life Member*
1862	Tait, Wm. Reid, Murkle Estate Office, Thurso

ELGIN.

Admitted	
1889	Adam, John, Coulardbank, Lossiemouth
1893	Adam, William, Chemical Works, Burghead
1893	Anderson, George H., Ironmonger, Elgin
1884	Anderson, Robert, Viewfield, Elgin
1871	Black, James, of Sherriffston, Elgin
1893	Brown, James, Miltonhill, Alves, Forres
1895	Brown, James Paterson, Innesmill, Urquhart, Elgin
1878	Bruce, D. C., Byres, Fochabers
1864	Bruce, George, Woodside, Elgin
1884	Brydon, John, Forester, Rothes
1893	Clark, Donald, Blervie Castle Farm, Forres
1871	Colvin, James E., Wester Manbeen, Elgin
1894	Creyk, Geo., Dalvey, Advie Station
1878	Cruickshank, David, Meft, Elgin
1875	Cruickshank, John, Solicitor, Elgin
1874	CUMMING, Sir Wm. G. Gordon, of Altyre, Bart., Forres
1895	Dean, Alex., Jointure, Leuchars, Elgin
1894	Dean, Wm., Milton Brae, Elgin
1839	DUNBAR, Sir Archibald, of Northfield, Bart.
1894	Dunbar, Jas., Shinnoch, Cromdale
1888	Edgar, James, Nether Bogside, Elgin
1893	Fettes, John, Westertown, Fochabers
1893	Fettes, William, Corskie, Garmouth
1893	Forbes, Robert, Woodhead, Forres
1895	Fraser, Alexander, Earnside, Alves, Forres—*Free Life Member*
1893	Fraser, William, Waterford Mills, Forres
1893	Fraser, William, Waterfolds, Elgin
1859	Garden, Arch., of Bernery, Forres
1890	Gilchrist, Wm., Leuchars, Elgin
1895	Gordon, R. A., Orchard Cottage, Rothes
1893	Grant, Charles, Salterhill, Elgin
1859*†	GRANT, Sir George Macpherson, of Ballindalloch, Bart.
1894	Grant, Jas., of Glen Grant, Rothes
1894	Grant, John, Bogg, Advie
1879	Grant, J., Mains of Advie, Advie
1871	Grant, John, Inverlaidnan, Carr Bridge
1894	Grant, Robt., Farmer, Cromdale
1893	Grant, Wm. R. (Buenos Ayres), Tullochgribbon, Grantown
1880	Haddon, P. M., St Mary's, Orton, Fochabers
1883	Henderson, Peter, Factor, Ballindalloch
1896	Hossack, Wm., Buntland, Orton, Fochabers
1864	Hunter, John, Dipple, Fochabers
1888	Hutcheson, James, W.S., Elgin
1897	Johnston, Lieut.-Col. Charles James, of Lesmurdie, Elgin
1893	King, William, Kingsmills, Elgin
1893	Knight, John, Kintrae, Duffus, Elgin
1896	Laing, Andrew, Brandston, Lochhill, Elgin
1895	Laing, William, Wallfield, Lochhill, Elgin
1893	Law, Arthur Woodland, Sanquhar Farm, Forres
1874	Lawrence, James, Forres Mills, Forres
1893	Leitch, Andrew, East Grange, Forres
1858	Leitch, A. K., Inchstelly, Forres
1877	Leitch, Simon, Sunnybank, Forres
1893	M'Culloch, Alexander, Ardivot, Lossiemouth

Admitted
1896 M'Gowan, Robert, Springfield, Elgin
1886 M'Gregor, Captain James, Balmenach, Cromdale
1883 Macdonald, Wm., Carsewell, Alves
1870 Mackay, H. M. S., Banker, Elgin
1870 Mackay, R. J., Burgie Lodge, Forres
1882 Mackenzie, F. C., Forres
1886 Mackenzie, Thomas, Carron, Strathspey
1893 Mackessack, Charles, Asleask, Forres
1893 Mackessack, Chas., Wester Alves, Forres
1882 Mackessack, George R., yr. of Ardgye and Roseisle, Ardgye, Elgin
1865 Mackessack, James, Earnside, Forres
1874 Mackessack, John, Kinloss, Forres
1864 Mackessack, Robert, of Ardgye and Roseisle, Ardgye, Elgin
1882 Mackessack, R. H., Newton of Struthers, Forres
1893 Maclean, George A., Hythehill, Elgin
1891 MacLeod, Captain Norman, of Dalvey, Forres
1876 M'William, James, Stoneytown, Keith
1893 Matheson, William, Muirton House, Kinloss, Forres
1893 Mathieson, Alex., Doonpark, Forres
1893 Mavor, George, Cluny, Forres
1894 Munro, Alex., The City Hotel Stables, Elgin
1894 Mutch, Jas., Deanshaugh, Elgin
1894 Neish, Wm., Merchant, Multen, Boharm
1894 Peterkin, Jas., 18 South Street, Elgin
1875 Peterkin, James Grant, of Grange, Forres
1894 Petrie, David, Gilston, Elgin
1871 Petrie, George, Rosehaugh, Elgin
1883 Petrie, George, Pitairlie, Elgin
1876 Petrie, W. A., Rosebrae, Elgin
1873 Reid, Alexander, Architect, Elgin
1895 Reid, Jas., Maverston, Urquhart, Elgin
1895 Reid, John, Gladhill, Garmouth, Elgin
1893 Robertson, Hugh, Balnageith, Forres
1896 Robertson, James, Auchinhalrig, Fochabers
1874 Robertson, William, 96 High Street, Elgin
1870 Robertson, Wm. A., Mayfield, Forres
1883 Russell, Alex., Myreside, Elgin
1893 Scott, Hugh, Dallas, Forres
1874 Scott, Robert, Easter Manbeen, Elgin
1895 Sellar, William, Longhill, Elgin
1893 Shiach, Gordon Reid, Surgeon Dentist, Elgin
1893 Simpson, William, Cowfords, Fochabers
1896 Smith, James M., Silverhills, Lossiemouth
1894 Smith, Wm., The Pans, Elgin
1893 Stephen, Alexander, Coxton, Lhanbryde, Elgin
1894 Stewart, John, Rynballich, Cromdale
1898 Stuart, James, Garbity, Orton, Elgin
1895 Stuart, James, Glen Spey Villa, Rothes
1893 Stuart, John Paul, Orbliston, Fochabers
1877 Sutor, James, The Collie, Fochabers
1898 Tait, James, V.S., Forres
1874 Thomson, J. Grant, Grantown
1896 Thomson, Peter, Mains, Orton, Fochabers
1883 THURLOW, Right Hon. Lord, Dunphail, Forres
1882 Urquhart, Robert, jun., Forres
1859 Walker, Robert, Altyre, Forres
1864 Walker, William, Auchray Buildings, Elgin
1883 Watson, H. A., U.P. Manse, Forres—*Free Life Member*
1875 Watt, James, Surradale, Westfield, Elgin
1881 Wedderspoon, James, Fochabers
1870 Wight, Alexander, Ironmonger, Forres
1864 Yool, Thomas, Calcots, Elgin
1852 Young, Alex., Findrassie House, Elgin
1871 Young, James, Waterton, Elgin

INVERNESS.

Admitted
1865 Anderson, James, Solicitor, Inverness
1889 Anderson, William, Solicitor, Inverness
1886 Baillie, A. C., Dochgarroch, Inverness
1883 Baillie, James E. B., of Dochfour, M.P., Inverness
1891 Barron, James, Editor of the *Inverness Courier*, Inverness
1882 Baxter, Frederick, Seedsman, Inverness
1883 Bethune, Angus, Seafield, Inverness
1883 Birnie, Alex., Wellhouse, Beauly
1892 Birnie, John, Balnafettack, Inverness
1874 Biscoe, T. Ramsay, of Newton, Kingillie, Inverness
1883 Black, Robert, C.E., Inverness
1874 Blair, Patrick, Sheriff-Substitute, Inverness
1892 Boyd, Donald, Merchant, Fort-William
1891 Cameron, Angus, Ben Nevis Auction Mart, Fort-William
1859†Cameron, Donald, of Lochiel, Auchnacarry, Fort-William
1881 Cameron, Duncan, Church St., Inverness
1895 Cameron, Francis, Lower Muckovie, Inverness
1890 Cameron, James, Coulnakyle, Nethy Bridge, R.S.O.
1892 Cameron, James T., Aberchalder, Inverness
1871 Cameron, John, Auchindaul, Spean Bridge
1891 Cameron, John, Culreach Mains, Nethy Bridge, R.S.O.
1896 Cameron, John, Mamore Cottage, Fort-William
1892 Cameron, Robert D., Lochgorm, Inverness
1884 Campbell, A. D., of Kilmartin, Glen Urquhart
1891 Cattell, James, Balnaglack, Petty, Inverness
1874 Chisholm, John, 8 Academy Street, Inverness
1871 Cran, John, Kirkton, Bunchrew, Inverness
1896 Cumming, William A., Allanfearn, Culloden, Inverness
1893 Davidson, John, Inverness
1865 Davidson, Robert, Queensgate, Inverness
1883 Davidson, Samuel, Beechhill, Inverness
1883 Dick, W. G., Horse-hirer, Inverness
1887 Duncan, James, Fern Villa, Inverness
1862†DUNMORE, Right Hon. The Earl of, Isle of Harris
1874 Elliot, Matthew, Flesher, Inverness
1890 Ferguson, Fergus, Monkstad, Uig, Portree
1896 Fletcher, Grant, Balnespick, Kingussie
1865†Forbes, Duncan, of Culloden, Inverness
1894 Fraser, Alexander, Balloch, Culloden, Inverness
1894 Fraser, Alex., 63 Church Street, Inverness
1874 Fraser, Alexander, Inverness
1857 Fraser, Alex., Sheriff-Substitute, Portree
1883 Fraser, David, Dalneigh, Inverness
1889 Fraser, Donald, Inches House, Inverness
1853 Fraser, Hugh, Balloch of Culloden, Inverness
1894 Fraser, Hugh Ernest, M.B., C.M., Inverness
1874 Fraser, James, C.E., Inverness
1874 Fraser, James, Mauld, Beauly
1865 Fraser, William, Annfield, Inverness
1896 Garden, Norman M'Leod, Gollanfield, Fort-George Station
1892 Garrioch, J. T., Lovat Estates Office, Beauly
1860 Gordon, George, Land Surveyor, Inverness

Admitted
1871 Grant, John, Inverlaidnan, Carr Bridge
1886 Grant, John Brown, Erchless, Beauly
1894 Grant, John Peter, of Rothiemurchus (Inverichnie, Banff)
1896 Grant, Peter, Farmer, Carr Bridge
1874 Grant, Major Wm., Drumbuie, Glen Urquhart
1883 Grant, Wm. R., Solicitor, Inverness
1896 Gray, Donald, National Bank Buildings, Inverness
1875 Guild, James L., Strowan, Inverness
1882 Gunn, Alex., V.S., Beauly
1896 Heddle, Peter Sinclair, Wellhouse, Beauly
1886 Honeyman, Thos., Auchnacarry, Spean Bridge
1865 Howden, John, Inverness
1883 Howe, Thomas, Parks of Inshes, Inverness
1875 Hugonin, R., Kinmylies House, Inverness
1874 Innes, Charles, Solicitor, Inverness
1883 Jones, R. E., Fassfern, Fort-William
1889 Kemble, Major, Knock, Skye
1890 Kennard, Cecil, Tormore, Broadford, Skye
1883 Laurie, Robert, Eilean Cottage, Drumnurn, Inverness
1896 Lawson, George, Beaufort Home Farm, Beauly
1891 Linton, Andrew, Inchree, Onich, N.B.
1894 Livingston-Macdonald, Captain R. M., 3rd Seaforth Highlanders, Flodigarry, Isle of Skye
1892 LOVAT, Lord, Beaufort Castle, Beauly
1892 MacAinsh, John, Congash, Grantown
1873 MACANDREW, Sir Henry C., The Castle, Inverness
1897 MacArthur, D. G., M.D., Fort-William
1892 M'Bain, William, Piterrald, Drumnadrochet
1865 M'Bean, D., Auchterblair, Carr Bridge
1895 M'Bean, Daniel, Cradle Hall, Inverness
1883 M'Bean, William, Cradle Hall, Inverness
1889 Maccoll, Rev. Canon Hugh, Rosse Parsonage, Fort-William
1883 Macdonald, Alex., Balintore, Bogroy
1884 M'Donald, Alex., Portree
1874 Macdonald, A. R., Ord, Isle of Ornsay
1893 M'Donald, D. D., Drumnadrochet, Glen Urquhart
1889 Macdonald, Hugh, Coach Proprietor, Fort-William
1896 Macdonald, John, Invernevis, Fort-William
1891 Macdonald, J. H., Charleston, Inverness
1897 M'Donald, Kenneth L., Skirinish, Skeabost Bridge, Isle of Skye
1846 Macdonell, E. R., of Morar, Fort-William
1893 Macdonell, James, Sidgreaves, Camusdaroch, Morar, Arisaig
1865 MacEwen, John C., Inverness
1893 Macfarlane, And., Viewfield, Kingussie
1879 M'Gillivray, Allan, Banchor, Kingussie
1892 M'Gillivray, Hugh, Cattle-dealer, Inverness
1874 M'Gillivray, John, Ballachroan, Kingussie
1876 MacGillivray, William, Eoligary, Barra
1877 M'Gregor, Archd., Glenforslan, Salen, Ardgour
1891 M'Intosh, Charles, Craggie, Inverness
1889 M'Intosh, Donald, West End Hotel, Fort-William
1889 MacIntosh, James, Factor, Ostaig, Isle Ornsay, Skye
1893 M'Kenzie, Alex., C.E., Kingussie
1891 Mackenzie, Dr M. T., Scolpaig, Lochmaddy

Admitted
1874 Mackenzie, N. B., British Linen Bank, Fort-William
1880 Mackenzie, Wm. D., of Farr, Inverness (Fawley Court, Henley-on-Thames)
1883 Mackintosh, A. D., of Mackintosh, Moy Hall, Inverness
1866 Mackintosh, C. Fraser, of Drummond, Inverness
1844 Mackintosh, Æneas W., of Raigmore, Inverness
1844 Mackintosh, A., of Holme, Inverness
1883 Mackintosh, Hugh, 57 Eastgate, Inverness
1875 Maclean, Charles, Milton, Lochmaddy
1875 M'Leish, Daniel, Bank of Scotland, Fort-William
1893 M'Lennan, Alex., Beechwood, Inverness
1892 MacLennan, William, Inverlochy Estate Office, Fort-William
1883 M'Millan, E. H., Caledonian Bank, Inverness
1878 Macpherson, C. J. B., of Balavil, Kingussie
1887 Macpherson, Col. Ewen, of Cluny Macpherson, Kingussie
1870 Macpherson, Colonel Lachlan, of Glentruim, Newtonmore
1888 Macpherson, L. A., of Corrimony, Inverness
1883 Macpherson-Grant, John, Milton Cottage, Kingussie
1883 Macrae, Alex. D., Ruthven, Kingussie
1891 Macrae, Horatio Ross, W.S., of Clunes, Inverness (57 Castle St., Edinburgh)
1874 Macrae, Roderick, Postmaster, Beauly
1883 MacTavish, Alex., Implement Maker, Inverness
1869 Malcolm, George, Craigard, Invergarry
1883 Manners, C. R., C.E., Inverness
1883 Marr, Alex., Dalcross, Fort-George Station
1865 Martin, John, Docharn, Boat of Garten, Strathspey
1889 Martin, Nicol, of Glendale, Dunvegan
1888 Merry, A. W., of Belladrum, Beauly
1883 Merry, C. J., Belladrum, Beauly
1874 Mitchell, Andw., Royal Bank Buildings, Inverness
1864 Munro, D., Milton, Fort-George Station
1874 Munro, John, Seedsman, Inverness
1890 Nicholson, Arthur Wm., Arisaig House, Fort-William
1893 Oberbeck, C., Central Restaurant, Inverness
1887 Orde, A. G. Campbell, yr. of Kilmory, Newton, Lochmaddy
1883 Paterson, Donald, Askernish, South Uist, Oban
1854 Peter, John, Croyard, Beauly
1888 Roberts, Wm., Highland Railway Co., Inverness
1874 Robertson, John, of Greshornish, Portree
1894 Robertson-Macleod, K. M., of Greshornish, Isle of Skye
1890 Rose, Hugh Francis, of Holme Rose, Fort-George
1865 Rose, James, Mains of Connage, Fort-George Station
1865 Rose, John, Leanach, Inverness
1883 Ross, Alex., Architect, Inverness
1865 Ross, George, Viewfield, Inverness
1883 Ross, James, Solicitor, Inverness
1883 Ross, Wm., Seafield of Raigmore, Inverness
1892 Scott, David, Auctioneer, Inverness
1896 Sharp, James D., Macdonald Estates Office, Portree
1890 Shaw, Alexander, Farraline Mains, Inverness
1883 Shaw, Duncan, W.S., Inverness

Admitted
1891 Sinton, P. J., Glennevis, Fort-William
1865 Smith, John, Inverallan House, Grantown
1884 Stewart, D. A., Ensay, Obbe
1887 Stewart, J. C., Glenmoidart, Moidart
1852 Stewart, John, of Ensay, Scorrybreck, Portree
1896 Strother, Dr James, Balspardon, Fort-George Station
1883 Stuart, W. G., Inverness
1865 Sutherland, E. C., Inverness
1884 TWEEDMOUTH, Right Hon. Lord, Guisachan House, Beauly
1883 Tytler, Edward G. F., of Aldourie, Inverness
1889 Urquhart, Farquhar, Seedsman, Inverness
1875 Walker, Geo. A., Torbreck, Inverness
1883 Walker, George, Wood Merchant, Inverness
1886 Watson, James, 29 Southside Road, Inverness
1891 Weir, James, Achnacarry, Fort-William
1896 Young, Colin, Gordon Square, Fort-William

NAIRN.

1856 Anderson, Robert, of Lochdhu, Nairn
1878 Cameron, Dr James Angus, of Firhall, Nairn
1839 CAWDOR, Right Hon. The Earl of, Cawdor Castle, Nairn
1891 Clark, James, Golford, Nairn
1883 Clarke, Lieut.-Col. M. A., Achareidh, Nairn
1883 Donaldson, H. T., Banker, Nairn
1865 Dougall, Andrew, Nairn
1891 Fiddes, George, Drumduan, Nairn
1892 Finlay, R. B., of Newton, Q.C., Nairn
1852 Fraser, William, of Kilmuir and Newton, Nairn
1894 Gowans, Charles F., Newton of Budgate, Cawdor, Nairn
1865 Joss, John, Budgate, Cawdor
1896 Macarthur, Alex., Nairnside, Cawdor, Nairn
1872 Macdonald, Donald, The Park, Nairn
1874 MacGregor, R., Fern Cottage, Nairn
1886 M'Intyre, Donald, Meikle Kildrummie, Nairn
1883 Mackillican, P., Achagour, Nairn
1891 Malcolm, William, Househill, Nairn
1874 Mather, John Arres, Delnies, Nairn
1891 Methven, Edward W., Hazelbrae, Nairn
1885 Mill, George, Piperhill, Nairn
1892 Robertson, John, Horse-hirer, Nairn
1873 Robertson, John S., Cawdor Estate Office, Nairn
1894 Robertson, Wm., Tomlunquhart, Nairn
1865 Rose, Major James, of Kilravock, Fort-George Station
1894 Russell, James, Blackhills, Nairn
1892 Smith, Alex., Cantraydown, Fort-George Station
1894 Squair, Geo., Kildrummie, Nairn
1880 Walker, John Mackintosh, of Geddes, Nairn

ORKNEY AND SHETLAND.

ORKNEY.

1854 Burroughs, Lieut.-General F. W. Traill, C.B., of Rousay
1870 Cromarty, William, Widewall, So. Ronaldshay
1894 Davidson, Wm. Henry Bain, Kirkwall

Admitted
1872 Drever, Jas., Swanny House, Finstown
1884 Fortescue, William I., Swanbister, Kirkwall
1875 Gibson, John, Langskaill, Rousay
1888 Hossack, B. H., Craigiefield, Kirkwall
1879 Johnstone, James, Orphir House, Orphir
1878 Learmonth, D. H., Housebay, Stronsay
1887 Maxwell, Henry, How, Sanday
1884 Reid, Alfred, Braebuster, Kirkwall
1884 Scarth, Robert, Binscarth, Kirkwall
1886 Sinclair, Thomas, Whitehall, Stronsay
1884 Stephen, Donald, Northtown, Birsay
1877 Stevenson, William, Holland, Stronsay
1894 Tait, John, Papdale, St Ola, Kirkwall
1878 Watt, W. G. T., Kierfiold House, Stromness

SHETLAND.

1884 Anderson, Gilbert, Hillswick, Lerwick
1863 Bruce, John, of Sumburgh, Lerwick
1892 Edmonston, Laurence, Hallegarth, Baltasound, Lerwick
1875 Edmondston, Mrs, of Buness, Unst, Lerwick
1881 Hamilton, Zachary Macaulay, Baltasound, Unst
1876 Jaffray, James, Belmont, Unst
1886 Manson, Anderson, Laxfirth, Lerwick
1891 Manson, Peter, Lunna, Shetland
1892 Pottinger, Sinclair, Grimsta, Lerwick
1876 Sandison, Alexander, Uyasound, Unst

ROSS AND CROMARTY.

1855 Adam, Æneas, Humberston, Dingwall
1893 Adam, Hugh R., Balvaird, Muir of Ord
1870 Allan, William, Drummondreoch, Ferrintosh, Conon Bridge
1895 Anderson, John Norrie, Stornoway
1883 Anderson, T. A., Ballachraggan, Alness
1862 Arras, Walter, Fodderty, Dingwall
1896 Bain, Donald, Applecross, Strome Ferry
1889 BELL, Sir William James, of Scatwell, Muir of Ord
1892 Bignold, Arthur, of Loch Rosque, Achnasheen
1893 Binning, James, Keppoch, Dingwall
1893 Brown, John, M.R.C.V.S., Invergordon, Ross-shire
1886 Brown, Stephen, Killilan, Lochalsh
1887 Brown, Rev. W. L. Wallace, The Manse, Alness
1883 Cameron, Archd., Killen, Avoch
1883 Cameron, Colin M., Balnakyle, Munlochy
1869 Cameron, Duncan, Banker, Tain
1891 Campbell, G. J., Sheriff-Substitute, Stornoway
1896 Cameron, John, Killen, Avoch
1896 Cameron, Kenneth Murray, Balblair, Edderton
1865 Darroch, Duncan, of Gourock Torridon, Achnasheen
1861 Douglas, Thomas, Mains of Rhynie, Fearn
1874 Douglas, William, Arboll, Fearn
1895 Dudgeon, Alex. Harper, Woodlands, Dingwall
1892 Duncan, William J., Solicitor, Dingwall
1884 Fletcher, J. D., of Rosehaugh, Inverness
1893 Forbes, Lachlan, Culcraigie, Alness
1855 Forsyth, John, Balintraid, Invergordon
1883 Fowler, J. A., yr. of Braemore, Inverbroom House, Garve
1893 Fraser, Donald, Balintore, Fearn
1893 Fraser, Donald, jun., Balintore Hotel, Fearn
1893 Fraser, Malcolm F., Balaldie, Fearn

Admitted
1892 Gallie, Abner, Morangie, Tain
1896 Gill, William Hope, Roskeen, Invergordon
1874 Goodbrand, James H., Culnaha, Nigg
1874 Gordon, J. A., of Arabella, Nigg
1875 Gordon, John, Cullisse, Nigg
1853 Grant, Kenneth, Craigellachie, Strathpeffer
1893 Grant, William, Rarichie, Nigg
1893 Gunn, Edmund J., Solicitor, Dingwall
1892 Gunn, John, of Aldie, Tain
1875 Gunn, William, Strathpeffer, Dingwall
1898 Gunn, William Fred., Nutwood, Strathpeffer
1894 Henderson, Alexander, Merchant, Dingwall
1883 Henderson, James, Culcairn, Invergordon
1884 Henderson, John, Factor, Fortrose
1889 Henderson, Thomas, Assistant Factor, Fortrose
1879 Inglis, George, of Newmore, Invergordon
1885 Jackson, Major Randle, of Swordale, Evanton
1892 Linton, John, Castle Craig, Nigg
1883 Littlejohn, Alex., of Invercharron, Ardgay
1893 Logan, David, Auchtertyre, Strome Ferry
1889 Lumsden, John Wm., Navity, Cromarty
1892 Macdonald, Alex., Rhives, Delny
1893 Macdonald, Donald, Wilkhaven, Portmahomack
1895 M'Farlane, Robert, Tomich, Invergordon
1874 MacGregor, James G., Tain
1897 MacIntyre, Alex. Mackay, Brae, Dingwall
1875 MacIntyre, Robert, Newton, Evanton, N.B.
1875 M'Intyre, P. B., Mains of Findon, Conon Bridge
1877 Mackay, Henry, Shandwick Mains, Nigg
1893 Mackay, William, Brucefield, Portmahomack
1893 Mackay, William Wallace, Wester Arboll, Fearn
1892 Mackenzie, Sir A. G. Ramsay, of Coul, Bart., Strathpeffer
1872 Mackenzie, Andw., of Dalmore, Alness
1895 Mackenzie, A. F., Inverbreakie, Invergordon
1883 Mackenzie, Colin Lyon, of St Martins, Braelangwell, Invergordon
1865 Mackenzie, James Fowler, of Allangrange, Munlochy
1854†Mackenzie, Sir Kenneth S., of Gairloch, Bart., Conon House, Conon
1892 Mackenzie, Murdo, Banker, Invergordon
1894 Mackenzie, Capt. T. A., yr. of Ord House, Muir of Ord
1883 Mackenzie, William, Procurator-Fiscal, County Buildings, Dingwall
1875 Maclennan, Alexander, Leanassie, Lochalsh
1888 M'Rae, Ewen M., Brahan Mains, Conon Bridge
1878 MacRaw, Donald, Moultavie, Alness
1887 Matheson, Sir Kenneth J., of Ardross, Bart., Alness
1892 Meiklejohn, John J. R., Novar, Evanton
1892 Methuen, John Balmacara, Lochalsh
1881 Middleton, Lord, Applecross, Lochcarron
1875 Middleton, A. A., Rosefarm, Invergordon
1864 Middleton, George, Cornton, Dingwall
1898 Middleton, George, jun., Docharty, Dingwall
1872 Middleton, Jon., Davidston, Invergordon

Admitted
1872†Middleton, Jon., Clay of Allan, Fearn
1893 Middleton, Thomas, Farness, Invergordon
1889 Middleton, T. H., Rosefarm, Invergordon—*Free Life Member*
1893 Middleton, Walter Ross Taylor, Solicitor, Dingwall
1875 Mitchell, Andrew, Ratagan House, Lochalsh
1881 Mundell, Walter, Moy, Muir of Ord
1870 Mundell, W. G., Inverlael, Lochbroom
1883 Munro, Sir Hector, of Foulis, Bart., Dingwall
1893 Munro, Hector, V.S., Fearn
1877 Munro, John, of Lemlair, Dingwall
1892 Munro, Stuart C., of Teananich, Alness
1891 Murdoch, Alex., Dalnavie, Alness
1875 Murdoch, James, Drynie Mains, Inverness
1884 Murray, Charles, of Lochcarron, Dingwall
1883 Murray, William, Bellfield, Inverness
1857 Murray, William, Kilcoy, Killearnan
1892 Ness, Charles, Auchindunie, Alness
1893 Paterson, Alex., Ardullie, Dingwall
1874 Paterson, Wm. G., Ord, Invergordon
1879 Peterkin, W., Dunglass, Conon Bridge
1884 Pirie, A. G., of Leckmelm, Ullapool
1884 Reid, N., New Kelso, Strathcarron, Ross-shire
1869 Robertson, Chas., of Kindeace, Invergordon
1893 Robertson, J. M., Ankerville, Nigg
1895 Robertson, John Cameron, Achilty, Strathpeffer
1874 Robertson, John, Mountegle, Fearn
1892 Ross, Dowager Lady, c/o Alex. Macdonald, Rhives, Delny
1893 Ross, A. M., Editor of the *North Star*, Dingwall
1896 Ross, Alex., Broompton, Fearn, Ross-shire
1895 Ross, Donald, Balnagown Arms Hotel, Tain
1872 Ross, George, Merchant, Dingwall
1893 Ross, George A., Rhynie, Fearn
1893 Ross, George, Bayfield, Nigg
1893 Ross, Hugh, Banker, Tain
1876 Ross, James, Pollo, Delny, R.S.O.
1874 Ross, John, Meikle Tarrel, Fearn
1893 Ross, John, Railway Contractor, Fearn
1892 Ross, John F., Pitcalnie, Nigg
1884 Ross, William, Kinnahaird, Strathpeffer
1887 Ross, W. C., of Cromarty
1892 Scott, James, Fearn
1892 Shoolbred, Walter, of Wyvis, Evanton
1893 Simpson, David William, Arcan Mains, Muir of Ord
1896 Smart, Arthur G., Scotsburn, Parkhill, Ross-shire
1864 Smith, Alexander P., Munlochy Farm, Munlochy
1892 Stewart, William, Alness Ferry, Resolis, Invergordon
1883 Stirling, John, of Fairburn, Muir of Ord
1891 Stirling, Major William, yr. of Fairburn, Kinellan Lodge, Strathpeffer
1888 St Quintin, Geoffray Aspley, Cromarty
1895 Stuart, David, Estate Office, Munlochy
1875 Trotter, R., Garguston, Muir of Ord
1894 Urquhart, Thos., of Delny, C.E., Delny Station
1891 Walker, William, Contullich, Alness
1868 Warrand, Colonel A. J. C., Ryefield, Ferrintosh
1892 Wilson, Hugh, Milton of Noth, Rhynie
1875 Young, James, Cadboll, Fearn
1894 Yule, Peter A., Ussie Cottage, Maryburgh

SUTHERLAND.

Admitted
1865 Barclay, Thomas, Skelbo Castle, Dornoch
1893 Box, John, Tongue, Sutherland
1876 Brebner, Robert, Skibo Mains, Dornoch
1884 Cameron, Alexander, Drumuie, Golspie
1893 Campbell, J. R., Shinness, Lairg
1883 Clarke, G. G., Eriboll, Lairg
1856 Dudgeon, John B., Crakaig, Loth
1883 Gunn, John, The Hermitage, Golspie
1851 Hill, Robt., Navidale House, Helmsdale
1874 Hill, Robert Robertson, Navidale House, Helmsdale
1854 Houstoun, Wm., Kintradwell, Brora
1850 M'Iver, Evander, Scourie House, Lairg

Admitted
1890 Mackintosh, John, Proncy, Dornoch
1888 M'Lean, Donald, Dunrobin, Golspie
1847 Marshall, John, Clebrig, Lairg
1844 Menzies, Duncan, Blairech, Lairg
1874 Mitchell, James R., Culgower, Loth
1863 Mitchell, Wm., Ribigill, Tongue
1874 Mundell, John, Dalchork, Lairg
1897 Murray, William, Inveran Cottage, Invershin
1893 Rose, Alex., Coul, Dornoch
1889 Scott, James, Durness
1892 Sellar, P., Culmaily, Golspie
1883 Shaw, James T., Gordonbush, Brora
1896 Trotter, William, Harvieston, Kinbrace
1885 Urquhart, John, Cambusavie, Dornoch

8.—BORDER DISTRICT.

EMBRACING THE

COUNTIES OF BERWICK, PEEBLES, ROXBURGH, AND SELKIRK.

BERWICK.

Admitted
1892 Aitchison, Wm., Kames, West Mains, Greenlaw
1854 Allan, John, Peelwalls, Ayton
1893 Bertram, George William, Heughead, Reston
1874 Bertram, John, Addinston, Lauder
1866 Bolam, Robt. George, Berwick-on-Tweed
1885 BOSWALL, Sir G. Houstoun, of Blackadder, Bart., Chirnside
1867 Bromfield, W. J., Old Greenlaw, Greenlaw
1891 Broomfield, George L., Solicitor, Lauder
1888 Brown, Colonel, Longformacus, Duns
1893 Brown, Robert, Cammo Foundry, Duns
1872 Brownlie, Alex., Haughhead, Earlston
1883 Brydon, Thos. T., Burncastle, Lauder
1884 Calder, T. A., Billie Mains, Chirnside
1872 Calder, W. A., Oxenrig, Coldstream
1880 Carmichael, John, Coldstream
1860 Chirnside, G., Edrington House, Berwick
1889 Cookson, C. L. Stirling, Renton, Grant's House
1884 Cossar, Mark, Greenknowe, Duns
1872 Cowe, Peter, Butterdean, Grant's House
1870 Cowe, Robert, Old Castles, Chirnside
1883 Cranston, Robert, Pathhead, Cockburnspath
1881 Craw, H. H., West Foulden, Berwick
1880 Darling, Thomas, 1 Palace Street East, Berwick
1896 Davidson, Robert, Harcarse, Duns
1882 Dickenson, Robert, Longcroft, Lauder
1859 Dickenson, Wm., Longcroft, Lauder
1891 Dodds, Robt., Blackadder Bank, Chirnside
1863 Dodds, William, Elwartlaw, Greenlaw
1863 Dryden, William, Coldstream
1889 Edington, Wm., Dowlaw, Coldingham, Ayton
1854 Elder, W., Implement Works, Berwick-on-Tweed
1893 Elliot, Frank, Middlestots, Duns
1884 Elliot, William, Ellemford, Duns
1897 Everett, F. H., Edington Mains, Chirnside
1882 Ferguson, J., Duns Castle Estate Office, Duns
1897 Forrest, Robt. Jack, Stewartslaw, Chirnside
1884 Fulton, John, Hatchednize, Coldstream
1893 Galbraith, Charles E., Ayton Castle, Ayton
1878 Gibb, Robert Shirra, Boon, Lauder—*Free Life Member*, 1885
1864 Gibson, J., Brown's Bank, Eyemouth
1893 Gillies, John, Edington Mills, Chirnside
1882 Gilroy, James, Berwick-on-Tweed
1894 Goodfellow, Alex., Todrig, Greenlaw—*Free Life Member*
1894 Grieve, Andrew, Flass, Lauder

Admitted
1892 Haldane, Fred, Barelees, Cornhill-on-Tweed
1880 Henderson, Robert, East Gordon, Gordon
1881 Herbertson, Robert H., Fans, Earlston
1893 Hogg, George, Blackhouse, Edrom
1892 Hogg, Robert, Fireburn Mill, Coldstream
1893 Hogg, Wm., jun., Clackmae, Earlston
1860†HOME, Right Hon. The Earl of, The Hirsel, Coldstream
1874 Home, Col. D. Milne, of Wedderburn, Caldra, Duns
1895 Home, David William Milne, yr. of Wedderburn, Paxton House, Berwick
1880 Hood, James, Cove, Cockburnspath
1854 Hood, T., Coldstream Mains, Coldstream
1884 Hood, Thos., Factor, Coldstream
1895 Hood, Thomas, jun., Bogend, Duns
1877 Hood, W., The Cove, Cockburnspath
1879 Hope, A. Peterkin, Sunwick, Berwick
1886 Hope, Col. Charles, of Cowdenknowes, Earlston
1876 Hunter, Jas., of Antonshill, Coldstream
1857 Johnston, James, Huntingdon, Lauder
1893 Johnstone, Robert Fender, Law House, Coldingham
1886 Laurie, John H., Hardens, Duns
1884 Leadbetter, H. M., Legerwood, Earlston
1859 Lockie, William, Choicelee, Duns
1884 Logan, Adam S., Ferney Castle, Reston
1876 Logan, J. W., M.I.Mech.E., Berwick
1893 Logan, Robert, Birkenside, Earlston
1893 Lyall, Alex., Greenknowe, Gordon
1863 Macbraire, J., of Broadmeadows, Berwick
1891 M'Donald, Dan., Hawkshaw, Coldstream
1868 M'Dougal, George, Blythe, Lauder
1893 M'Dougal, Jas., Eccles Tofts, Greenlaw
1893 M'Dougal, John, Lylestone, Lauder
1893 Mackay, John, Wyndhead, Lauder
1885 M'Lean, David, Estate Office, The Crooks, Coldstream
1881 Mack, Joseph, Berrybank, Reston
1870 Menzies, John, Bankhead, Duns
1892 Menzies, John C., Bankhead, Duns—*Free Life Member*
1894 Michael, Reginald Warburton, Crosbie, Earlston
1884 Middleton, Hilton, Kimmerghame Mains, Duns
1889 Millican, Gilbert T., Harelaw, Chirnside
1872 Muirhead, Frank, Paxton, Berwick
1893 Murray, James, Brockholes, Grant's House
1893 Murray, Thomas, Brockholes, Grant's House
1880 Nisbet, George, Rumbleton, Greenlaw
1870 Nisbet, Jas., of Lambden, Greenlaw
1877 Paterson, George, Press Mains, Reston
1872 Paterson, James, Kidshielhaugh, Duns
1880 Porteous, James, Solicitor, Coldstream

Admitted
1872 Rae, Robt., Burnbank, Foulden, Berwick
1878†Reay, The Right Hon. Lord, Carolside, Earlston
1893 Robertson, James Crawfurd, West Mains, Coldstream
1802 Robertson, William, Blinkbonny, Earlston—*Free Life Member*
1863 Romanes, Robert, of Harryburn, Lauder
1872 Rutherford, A., Rumbleton Law, Gordon
1890 Scott, Thomas, Abbey St Bathans, Grant's House
1872 Shiel, Andrew, Coldstream
1861 Simson, George, Courthill, Kelso
1863 Smith, Alex., Letham, Berwick
1890 Smith, Andrew, of Whitchester, Duns
1864 Smith, F. C., Hoprig, Cockburnspath
1872 Smith, J. F., Darnchester, Coldstream
1880 Somervail, J. A., Broomdykes, Chirnside
1891 Spence, Arthur Geo., Whitelaw, Edrom
1874 Stephenson, Richard, Chapel, Duns
1884 Swan, Robert G., Duns
1880 Swinton, J. L. Campbell, of Kimmerghame, Duns
1855 Thomson, James, Mungoswalls, Duns
1885 Thomson, Samuel, Manderston, Duns
1863 Torrance, T., Whitsome Laws, Edrom
1894 Turnbull, George Gillon, Abbey St Bathans, Grant's House
1884 Tweedie, David, Nether Howden, Lauder
1894 Watson, J. M., Marygold, Edrom
1877 Weatherhead, Wm., Preston, Duns
1863 Weddell, John Wilkie, Lauder Barns, Lauder
1885 Welsh, Alex., Seedsman, Coldstream
1863 White, A., Kelloe Mains, Edrom
1880 White, E. C., Ayton Law, Ayton
1872 Wight, R. B., Ecclaw, Cockburnspath
1889 Wilkie, Jas. Bruce, of Foulden, Berwick
1862 Wilson, J., Chapelhill, Cockburnspath
1895 Winter, Ramsay, Ruthven, Coldstream
1864 Wood, James, Bigham, Coldstream
1874 Wyllie, James, Pathhead, Cockburnspath

PEEBLES.

1873 Anderson, John, Cramalt, Selkirk
1884 Ballantyne, Wm., Wormiston, Eddleston
1882 Beresford, J. G. M., of Macbiehill, Lamancha
1872 Brown, Wm., Elderscroft, Springhill, Peebles
1884 Cairns, John, Eshiels, Peebles
1881 Carmichael, G. H. G., Castle Craig, Dolphinton
1892 Constable, George W., Traquair Estate Office, Innerleithen
1874 Dickson, W. L., Drumelzier Haugh, Biggar
1884 Dyson, F. W., Crossburn, Peebles
1874 Elibank, Right Hon. Lord, Minden, Eddleston
1884 Ellis, John, Waterhead, Eddleston
1887 Erskine, Rear-Admiral James E., of Venlaw, Peebles
1882 Fergusson, Sir James R., of Spitalhaugh, Bart., West Linton
1880 Forrest, George, Edston, Peebles
1881 Gibson-Carmichael, Sir T. D., of Skirling, Bart., M.P., Castle Craig
1876 Gordon, Charles, of Hallmyre, Lamancha
1884 Gracie, Charles A., Easter Happrew, Stobo
1882 Greenshields, Dav., Garvald, Dolphinton
1894 Jack, Geo., Callands, Mountaincross, Peeblesshire
1893 Macpherson, Donald, Edderston, Peebles
1885 Maxwell, James, Stobo Estate Office, Stobo

Admitted
1843 Montgomery, Sir G. Graham, of Stanhope, Bart., Stobo Castle, Stobo—*Honorary Secretary of the Society*
1846 Montgomery, John B. H., Stobo Castle, Stobo
1852 Muir, G. W., Kirkhouse, Traquair
1889 Newbigging, Thomas, Corstane, Biggar
1882 Paterson, J., South Dawyck Mill, Stobo, Peebles
1881 Ritchie, G. D., Cloverhill, Biggar
1851 Stewart, James, Noblehall, Lamancha
1880 Stodart, Thomas Tweedie, of Oliver, Broughton
1853 Tennant, Sir Chas., of The Glen, Bart., Innerleithen
1890 Tennant, Edward P., yr. of The Glen, Innerleithen
1877 Thom, Alex., Chapelhill, Peebles
1886 Thorburn, M. G., of Glenormiston, Innerleithen
1889 Thorburn, William, Craigerne, Peebles
1873 Tweedie, A. G., Hearthstone, Broughton, Peebles
1860 Tweedie, James, of Quarter, Biggar
1878 Williamson, Miss Katharine Isabella, of Cardrona, Peebles
1884 Wilson, James, West Mains, Dolphinton
1896 Wilson, R. S., Burnetland, Broughton
1860 Woddrop, W. A., of Garvald, Dolphinton

ROXBURGH.

1872 Alexander, George, Easter Lilliesleaf, St Boswells
1884 Ballantyne, David, Shaws, Newcastleton
1860 Ballingall, George, Clarilaw, St Boswells
1863 Balmer, Thomas, Melrose
1886 Beattie, John, Braidlie, Newcastleton
1867 Bell, Alex., Yetholm, Kelso
1885 Bell, Wm. Scott, yr. of Woll, Hawick
1859 Borthwick, A. H., Ladiesyde Lodge, Melrose
1889 Boyd, Andrew, F.R.C.V.S., Melrose
1861 Boyd, John B., of Cherrytrees, Kelso
1863 Boyd, W. B., of Faldonside, Melrose
1880 Brown, J., Hundalee, Jedburgh
1884 Brown, James, Land Steward, Floors, Kelso
1889 Bruce, John, Easter Langlea, Galashiels
1866 Brunton, James, Broomlands, Kelso
1867 Brunton, John S., of Ladhope, Galashiels
1862 Brydon, Adam, Mounthooly, Jedburgh
1863 Burn, John, Newhouse, Yetholm
1876 Carre, T. A. R., of Caverscarre, St Boswells
1871 Caverhill, John, Jedneuk, Jedburgh
1867 Charlton, M., jun., Browndeanlaws, Jedburgh
1893 Clark, John Gay, Mossburnford, Jedburgh
1880 Cochrane, A. L., of Kingsknowes, Galashiels
1872 Croall, John, Coach Works, Kelso
1872 Cunningham, C. J., of Muirhouselaw, Wooden, Kelso
1884 Cunningham, Robt., Glendouglas, Jedburgh
1888†Dalkeith, The Earl of, Eildon Hall, St Boswells
1865 Dalrymple, Hon. G. Gray, Elliston House, St Boswells
1889 Davidson, Alexander, Auctioneer, Melrose
1872 Davidson, Wm., Colmslie, Galashiels
1890 Davidson, Wm., Cattle-salesman, Jedburgh
1863 Dodd, James, Hundalee Cottage, Jedburgh

Admitted
1863 Dodd, Nicholas, Nisbet, Jedburgh
1893 Douglas, Captain Edward Palmer, of Cavers, Hawick
1889 Douglas, Francis, Springwood Park, Kelso
1871 Douglas, George, Upper Hindhope, Jedburgh
1867 Douglas, George Sholto, 5 Abbotsford Grove, Kelso
1862†Dudgeon, J. Scott, Longnewton, St Boswells
1876 Dunn, John, Ramsay Lodge, Kelso
1880 Elliot, James, Burnhead, Hawick
1893 Elliot, John, Hindhope, Jedburgh
1863 Elliot, John, The Flat, Newcastleton
1874 Elliot, Robert Henry, of Clifton Park, Kelso
1893 Elliot, Thomas, Attonburn, Kelso
1893 Elliot, Thomas Robert Barnewall, yr. of Clifton Park, Kelso
1872 Elliot, Wm. B., of Benrig, St Boswells
1878 Erskine, Charles, Melrose
1884 Fairbairn, J. J., Greenend, St Boswells
1889 Fairfax, Rear-Admiral Sir Henry, C.B., of Old Melrose
1884 Fleming, John, Roan, Newcastleton
1872 Forsyth, James (Hooper & Co.), Kelso
1893 Forsyth, Robert, New Smailholm, Kelso
1855 Gardner, Robert, Gattonside, Melrose
1843 Gibson, Thomas, Haymount, Kelso
1895 Gilmour, T. Campbell, Liddelbank, Canonbie
1884 Grierson, Robert, Whitechesters, Hawick
1878 Grieve, C. J., Branxholm Park, Hawick
1890 GRIFFITH, Sir Richard Waldie, of Hendersyde Park, Bart., Kelso
1895 Haddon, Andrew, Honeyburn, Hawick
1880 Haddon, Walter, Solicitor, Hawick
1884 Hall, David, Larriston, Newcastleton
1889 Hamilton, George, Abbey Hotel, Melrose
1892 Hay, Athole S., of Marlfield, Roxburgh
1889 Henderson, James, Estate Manager, Old Melrose, Melrose
1893 Henderson, J. Graham, Weensworth Mill, Hawick
1863 Hilson, George, Solicitor, Jedburgh
1895 Hogarth, William Gray, Linton, Bankhead, Kelso
1889 Hutton, John, V.S., Kelso
1887 Johnston, John S., Crailinghall, Jedburgh
1889 Johnston, Wm. Lee, Oxnam Neuk, Jedburgh
1890 Karr, H. Seton, of Kippielaw, M.P., St Boswells
1893 Kennedy, Daniel, Littledeanlees, Jedburgh
1896 Kennedy, William, Kinninghall, Hawick
1833 Kerr, W. S., of Chatto, Sunlaws, Kelso
1890 Kidd, Henry, Lowood, Melrose
1863 Laing, George, Tweedbank, Kelso
1880 Laing, Thomas (Laing & Mather), Kelso
1880 Laing, Walter, Kersheugh, Jedburgh
1872 Lawrie, Thomas, Ormiston Road, Melrose
1863 Lees, Richard, Drinkstone, Hawick
1893 Logan, Somner, Harrietfield, Kelso
1869*†LOTHIAN, The Marquis of, K.T., Monteviot, Jedburgh
1883 Macpherson, Donald, Wolfelee, Hawick
1893 Madder, James William, St Boswells
1893 Mather, R. V. (Laing & Mather), Kelso
1880 Maxwell, John, Coachbuilder, Kelso
1892 Mein, Jas. A. W., of Hunthill, Jedburgh
1893 Minto, the Earl of, Minto House, Hawick
1886 Moffat, James, Whitehaugh, Hawick
1863 Murray, John, of Wooplaw, Galashiels
1889 Noble, Robert, of Borthwickbrae, Hawick
1860 Ogilvie, George, Holefield, Kelso

Admitted
1886 Oliver, Andrew R., Thornwood, Hawick
1889 Oliver, Geo. Lindsay, The Border Club, Hawick
1852 Oliver, James, of Thornwood, Hawick
1880 Oliver, John (Borthaugh), Hawick
1853 Oliver, Robert, of Blakelaw, Lochside, Kelso
1893 Oliver, Captain William James, Hoselaw, Kelso
1878 Oliver, Wm. M., Howpasley, Hawick
1893 Paton, E. D., Sintonparkhead, Hawick
1889 Paton, Major James, of Crailing, Jedburgh
1893 Peter, John Stewart, Lintalee, Jedburgh
1863*†POLWARTH, Right Hon. Lord, Mertoun, St Boswells
1889 POLWARTH, The Hon. The Master of, Mertoun, St Boswells (Humbie House, Upper Keith)
1854 Pott, Gideon, of Dod, Knowesouth, Jedburgh
1893 Purdon, Finlay, Borthaugh, Hawick
1856 Rawdin, Joseph, Chemist, Jedburgh
1863 Rea, Charles, Cleithaugh, Jedburgh
1872 Renwick, John, Nurseryman, Melrose
1894 Ritchie, D. N., of The Holmes, St Boswells
1889 Robertson, John, Borthwickbrae, Hawick
1893 Roberton, James, Ladyrigg, Kelso
1893 Roberts, George, Whitelee, Galashiels
1889 Rodger, James, Minto Estate Office, Hawick
1880 Ross, Richard, Rutherford, Kelso
1893 Routledge, Richard, Gorrenberry, Newcastleton
1884 Rutherfurd, W. E. Oliver, of Edgerston, Jedburgh
1889 SCOTT, The Hon. H. J., Brotherston, St Boswells
1888 SCOTT, Hon. J. C. Maxwell, of Abbotsford, Melrose
1884 Scott, Chas., Milsington, Hawick
1863 Scott, George, Kersknowe, Kelso
1882 Scott, H. J. E., of Makerston, Kelso (Weston, Underwood, Derby)
1894 Scott, John, Newton, Hawick
1881 Scott, John Corse, of Synton, Hawick
1889 Scott, John Robson, yr. of Newton, Jedburgh
1863 Scott, Robert, Falnash, Hawick
1863 SCOTT, Sir W., of Ancrum, Bart., Jedburgh
1894 Shepherd, David, Hardies Mill Place, Kelso
1883 Sinclair, C. G., Grahamslaw, Kelso
1879 Smith, James, Kelso
1893 Smith, James, of Olivebank, St Boswells
1880 Smith, John, Galalaw, Kelso
1888 Smith, J. R. C., Mowhaugh, Kelso—*Free Life Member*
1881 Smith, R. C., Ormiston, Jedburgh
1887 Smith, Thomas A., Kirkton, Hawick
1888 Sprot, Edward William, of Drygrange, Melrose
1887 Sprot, Lieut.-General John, of Riddell, Lilliesleaf
1872 Stavert, Archd., of Hoscote, Hawick
1851 Stedman, James, Timpendean, Jedburgh
1880 Storie, W. G. R., Newtown, Jedburgh
1846 Tait, James, Banker, Kelso
1893 Taylor, William, Ashybank, Hawick
1867 Thomson, A., of Mainhill, St Boswells
1889 Tress, George Russell, Whitelee, St Boswells
1894 Tress, William Maxwell, Faughill, St Boswells
1863 Turnbull, J., Eastfield, Kelso
1889 Turnbull, Mark, Melrose
1863 Turnbull, W. Geo., Spittal, Jedburgh
1872 Usher, Thomas, Courthill, Hawick

Admitted
1880 Waddell, Alex., of Palace, Jedburgh
1893 Watson, Robert F., Briery Yards, Hawick
1889 Watson, T. Lindsay, Seaburn, Hawick
1886 Watson, Capt. W. S., of Burnhead, Hawick (care of T. Usher, Courthill, Hawick)
1890 White, Alex., Nottylees, Kelso
1863 Wilson, George, Kilmeny, Hawick

SELKIRK.

1866 Anderson, B. T. G., of Tushielaw, Selkirk
1863 Anderson, G., of Hawthorn Bank, Selkirk
1889 Anderson, S. Scott, of Shaws, Selkirk
1868 Brown, Adam, Hyndhope, Selkirk
1893 Cochrane, Walter, Leynahurst, Galashiels
1889 Connochie, Thomas D., V.S., Galashiels
1877 Connochie, William Dixon, V.S., Selkirk
1871 Dun, John, Galashiels
1869 Elliot, A. T., Newhall, Galashiels
1889 Elliot, John, Meigle, Galashiels
1854 Elliot, Thomas, Blackhaugh, Galashiels
1860 Elliot, Walter, Hollybush, Galashiels
1880 Gibson, Thomas, jun., Torwoodlee, Galashiels

Admitted
1878 Grieve, James, Howden, Selkirk
1885 Grieve, James, jun., Fernielee, Selkirk
1895 Hall, Robert, Kiln Knowe, Galashiels
1875 Howatson, J. L., Ramsaycleugh, Selkirk
1878 Laidlaw, Robert, Rodono, Selkirk
1849 Lang, Hugh M., of Broadmeadows, Selkirk
1878 Lang, Robert J., Broadmeadows, Selkirk
1889 Lawrence, David, Whytbank, Galashiels
1878 Lindsay, John V., Whitehope, Selkirk
1896 Linton, Andrew, Oakwood, Selkirk—*Free Life Member*
1873 Linton, Simon, Oakwood, Selkirk
1888 Macfarlane, Jas., Ashiestiel, Galashiels
1880 Mitchell, Thomas, Howford, Selkirk
1880 Muir, John, Dryhope, Yarrow, Selkirk
1843†NAPIER and ETTRICK, Right Hon. Lord, K.T., Thirlestane Castle, Selkirk
1897 Pattison, Walter, Laidlawstiel, Clovenfords, Selkirk
1885 Plummer, Chas. H. S., of Sunderland Hall, Selkirk
1859 Pringle, Alex., of Whytbank, Selkirk
1863 Pringle, J. T., of Torwoodlee, Galashiels
1880 Riddell, John, Rink, Galashiels
1880 Scott, John, of Gala, Galashiels
1896 Steedman, John, County Clerk, Selkirk
1880 Turnbull, James, The Glebe, Selkirk

ENGLAND.

Admitted
1855 Alexander, John, 9 Raymond Terrace, Cheltenham
1878 ANCASTER, The Earl of, Normanton Park, Stamford
1873 Anderson, J., Bradbury, Enville, Stourbridge
1850 Anderson, Robert Hood, Devonshire Club, London
1893 Anderton, Geo. Herbert, Kelpin Lodge, Howden, Yorks
1863 Angus, John, Whitefield, Morpeth
1896 Anstruther, Arthur W., 4 Whitehall Place, London, S.W.
1864 Archer, Thomas, 1 Westminster Chambers, Victoria Street, London
1873 Ashdown, A. H., Uppington, Wellington, Salop—*Free Life Member*
1863 Askew, Wilson, of Pallinsburn, Coldstream
1883 Aveling, T. L., Rochester
1890 Bamford, Henry, jun., Leighton Iron Works, Uttoxeter
1895 Barford, James G. (of Barford and Perkins), Peterboro
1880 Barrett, Robert Bell, Skipton Castle, Skipton
1896 Barron, James, The Lodge, Home Farm, Tyburn, Birmingham — *Free Life Member*
1872 Bell, And., Hilgay, Downham Market, Norfolk
1869 Bell, Robert, 5 Latimer Street, Tynemouth
1877 Bell, T. (Messrs Robey & Co.), Lincoln
1884 Benson, R. A., Duchy of Cornwall Office, Liskeard, Cornwall—*Free Life Member*
1882 Bigg, Thomas, Great Dover Street, London
1885 Birch, W. de Hoghton, Hoghton Estate Office, Walton Hall, Preston—*Free Life Member*
1874 Bird, Ebenezer, Ramornie, Kington, Herefordshire
1865 Black, Major Alexander, 7 Wilberforce Road, Finsbury Park, London, N.W.
1859 Black, John, Ford, Northumberland
1893 Blackstone, Edward Christopher (Blackstone & Co., Limited), Stamford
1875 Blackwood, Alex., Estate Office, Leadenham, Lincoln
1863 Bolam, John, Bilton, Lesbury, Northumberland
1883 Bonallo, W. C., Estate Office, Locko Park, near Derby
1879 Bonnor, G. H., 14 Cockspur Street, Pall Mall, London, S.E.
1864 Borton, John, Barton House, Malton
1875 Brotchie, G., Grinkle, Loftus, R.S.O.
1877 Brown, John, Morden Farm, Hertford
1873 Browne, Colvile, M.R.A.C., 2 Plantation Cottages, Hextable, Kent—*Free Life Member*
1884 Brydon, John, Seed Merchant, Darlington
1873 Brydon, Robert, The Dene, Seaham Harbour—*Free Life Member*

Admitted
1875 Bullock, Matt., 48 Prince's Gate, London, S.W.
1870 BURDETT-COUTTS, Baroness, 1 Stratton Street, Piccadilly, London
1896 Burkitt, William, Grange Hill, Bishop Auckland—*Free Life Member*
1877 Burr, John M., Writtle Park, Ardinstor, Essex
1894 Burrell, Charles, jun., Thetford, Norfolk
1882 Burton, Dr M. B., Oswell House, Lindley, Huddersfield
1870 Cairns, John, Fernbank, Heaton Chapel, Stockport
1878 Cameron, H. E., Newton Leys, Ashbourne, Derbyshire
1863 Campbell, A. H., Cornwall Gardens, London, S.W.
1863 Campbell, G. W., 22 Queen's Gate, London, S.W.
1838 CAMPBELL, Sir James, Bart., Wheatmead Park, Lydney
1894 Carlisle, Countess of, Naworth, Brampton, Cumberland
1880 Carnegie, Wm. C., Sarsden, Chipping Norton
1878 Carr, Robt., Felkington, Norham, Berwick-on-Tweed—*Free Life Member*
1887 Carrington, George, M.R.A.C., Missenden Abbey, Great Missenden, Bucks —*Free Life Member*
1838 Carstairs, D., Hailes House, Fairfield, Liverpool
1877†CECIL, Lord Arthur, Orchardmains, Tunbridge
1877 CECIL, Lord Lionel, Orchardmains, Tunbridge
1884 Chambers, T. W., Prospect House, Peltutho, Abbeytown
1894 Clark, Geo., Dovenby Hall, Estate Office, Cockermouth
1877 Clark, James, Somerby, Grantham
1884 Clark, J. M., Featherstone Castle, Haltwhistle
1873 Clark, William, New Mousen, Belford
1893 Clarke, Thomas, 3 Green Park, Darlington
1877 Clench, F. (Messrs Robey & Co.), Lincoln
1884 Clinton, W. E. Pelham, Moore Court, Stroud—*Free Life Member*
1857 Collyer, W. D., Craig Nethan, Weston-super-Mare
1851 COLVILLE of Culross, Right Hon. Lord, K.T., 41 Eaton Place, London
1877 Corbett, T., Perseverance Iron Works, Shrewsbury
1891 Coward, T. A., Eden Town, Carlisle—*Free Life Member*
1879 Crabb, Wm., Silloth, Cumberland
1890 Crabtree, Henry, 2 Rochdale Road, Heywood, Lancashire—*Free Life Member*
1875 Craig, H. V. Gibson, Lady Mede, Little Kimble, Bucks
1890 Craig, James, The Blanks, Newdigate, Surrey

Admitted

1880 Craig, James, Moat House Farm, Biscot, Luton, Beds

1882 Craig, Robert, Crondon Park, Billerican, Essex

1891 Craig, William, Wickridge Farm, Stroud, Gloucester

1860 Crawford, Daniel, Potterells Farm, Hatfield, Herts

1896 Crombie, Walter G., Church Farm, Eversley, Winchfield, Hants

1893 Crow, Philip Mansfield, Howden, Yorks

1868 Cruikshank, Edward C., Shrublands, Graffham, Petworth, Sussex

1876 Cruickshank, J. W., Coombe Head, Haslemere, Surrey

1882 Cunningham, T. D. S., Isle of Caldy, Tenby, South Wales

1893 Cuthbert, Thomas W., Churston, Devon

1894 Daine, Herbert S., Harris Institute, Preston—*Free Life Member*

1874 Dallas, A. G., 10 Tervor Terrace, London, S.W.

1894 Davidson, William, Tithe Hill, Cornhill-on-Tweed

1887 Davies, Edward Smith, Atchley, near Shifnal—*Free Life Member*

1859 Dawson, J., Cleveland House, Salop Road, Welshpool, Montgomeryshire

1869 Dickie, Joseph, The Bank House, The Broadway, Tooting, London, S.W.

1886 Dickson, Thos. A., Estate Office, Overstone Park, Northampton—*Free Life Member*

1895 Dixon, Albert Alexander, Tanwood House, Chaddesley Corbett, near Kidderminster, Worcestershire—*Free Life Member*

1894 Dixon, T., jun., Leadhill, Stocksfield-on-Tyne

1849 Dixon, Thomas G., Dolbon, St Asaph

1880 Dollar, T. A., V.S., 56 New Bond Street, London

1887 Don, H. G., The Lodge, Fingringhoe, Colchester

1871 Donne, Henry, Leek Wootton, Warwick

1872 Douglas, Thomas, 5 Charlotte Square, Newcastle

1885 Douglas, Wm., 20 Farringdon Road, London

1861 DRUMMOND, Hon. F., 58 St George's Square, London

1874 Duff, G. Smyttan, 58 Queen's Gate, South Kensington, London, S.W.

1879 Duncan, John, Tilney, St Lawrence, Kings Lynn

1882 Duncan, John W., Coldrey, Bentley, Farnham, Surrey

1882 Duncan, Robert, Berwick Farm, Stamford River, Essex

1884 Dunn, James, Gilling Grange, Richmond, Yorks

1895 Dykes, Leonard B., Red House, Keswick

1871 Eden, Henley, Woodstock, Ascot, Berks

1878 Edmondson, T., 144 Princes Street, Old Garralt, Manchester

1895 Egginton, Arthur, South Ella, Hull

1873 Eley, Rev. Dr Wm. H., Etchingham Rectory, Hawkhurst—*Free Life Member*

1875 ELLESMERE, The Right Hon. The Earl of, Worsley Hall, Manchester

1873 Elliot, Prof. Thos. J., The Bridge House, Tuddenham, Mildenhall, Suffolk—*Free Life Member*

1882 Ensor, Thos. H., 54 South Street, Dorchester—*Free Life Member*

1882 Esson, Robert, Zenda Cottage, Ashtead, Surrey

1886 Faber, Alfred D., Belmont, Ilfracombe—*Free Life Member*

Admitted

1869 Ferme, G., 104 Rosendale Road, West Dulwich, London, S.E.

1894 Fielding, J. B., Downing, Holywell, North Wales

1876 Fleming, D. G., Pavarham, Bedford

1881 Fleming, Hugh, Felmersham, Bedford

1891 Forbes, A. C., the Home Farm, Bowood, Calne, Wilts—*Free Life Member*

1894 Forrester, James John, Bryanston, Blandford, Dorset—*Free Life Member*

1854 Friar, Thomas, of Grindon Ridge, Norham-on-Tweed

1888 Galashan, Alfred, 65 Bristol Road, East Ham, London, E.

1892 Gascoigne, Major R. F. T., Letherton Hall, Aberford, Leeds

1877 Gell, H. C. Pole, Hopton Hall, Wirksworth

1879 Gibson, J. G., 1 Vanburgh Park, Blackheath, London

1889 Gilchrist, D. A., University Extension College, Reading—*Free Life Member*

1882 Gilkes, Gilbert, Canal Iron Works, Kendal

1893 Gilmour, Alex., Leeds, late Gairloch, Dumfries

1873 Goddard, H. R., Fairfield, Illogan, Redruth—*Free Life Member*

1875 Gordon, W. R. G., Barsham Lodge, Sandown, Isle of Wight

1866 Gough, Wm., Land Agent, Wykeham

1881 Gover, L. D., 30 Bernard Street, Russell Square, London, W.S.—*Free Life Member*

1886 Gow, George, Tregothnan Office, Truro

1865 Graham, Paul, Brooks's Club, London

1873 Graham, Robert G., Beanslands Park, Irthington, *viâ* Crosby-on-Eden, Carlisle

1888 Graham, William, Eden Grove, Kirkbythore, Penrith

1858 Gray, T. R., St Margaret's, Cheltenham

1854 Gregory, A. A., 12 Gatestone Road, Upper Norwood, London, S.E.

1895 Greenwood, Thomas P., Cononley, *viâ* Keighley, York—*Free Life Member*

1892 Griffen, Hugh Reid (W. A. Wood & Co.), 36 Worship Street, London

1834 Gwynne, A. T. J., of Monachty, Cardigan

1877 Hall, T. F., Billiter Buildings, Billiter Street, London, E.C.

1867 Hallen, Vety. Lieut.-Col., F.R.S.E., F.R.C.S.E., Pebworth Fields, Stratford-on-Avon

1883 Hamilton, H. W., Lilleshall, Newport, Salop—*Free Life Member*

1838 Handley, John, Greenhead, Milnthorpe

1887 Handley, William, Greenhead, Milnthorpe, Westmoreland

1884 Hardy, C. W. L., Gittisham, Honiton—*Free Life Member*

1867 Harris, Wm., Rowlands Castle, Hants

1897 Harrison, George, The Hall, Gainford, Darlington

1895 Harrison, John, 28 Spencer St., Carlisle

1875 Haughton, W. H., Highlands, Gt. Barford, St Neots,

1887 Haviland, W. A., Warbleton, Heathfield, Sussex

1883 Hayward, C. P., Beaumont Manor, Lincoln

1878 Henderson, John, Estate Office, West Dean, Chichester—*Free Life Member*

1854 Henderson, Thos., Hastings Cottage, Seaton Delaval, Newcastle-on-Tyne

1881 Henderson, W., East Elrington, Hexham—*Free Life Member*

1877 Herdman, George, The Abbey Farm, Massingham

Admitted
Hewison, Robert, Agricultural College, Aspatria—*Free Life Member*
1873 Hill, A. J., St Keverne, Harrow-on-the-Hill—*Free Life Member*
1894 Hill, Henry F., Agricultural College, Aspatria—*Free Life Member*
1873 Holliday, Jonathan, Kirkbampton, Carlisle
1878 Holliday, Wm., Pelutho West House, Abbey Town, Carlisle
1882 Holm, Alex., Buckland, Betchworth, Surrey
1875 Holm, John, Waterend, Ongar, Essex
1886 Hooper, C. H., Highlands Farm, Swanley, Kent—*Free Life Member*
1880 Hope, A., Cleveland Cottage, Middleton in Teesdale
1878 Hope, John W., c/o Lever Brothers, Ltd., Port-Sunlight, Birkenhead
1878 Hornsby, J., Spittalgate Ironworks, Grantham
1863 Howie, H. B., North Hazelrigg, Belford
1865 Hudspith, Wm., Green Croft, Haltwhistle
1869 Hume, Archibald, 14 Imperial Square, Cheltenham
1879 Hunt, A. E. Brooke, Holmsley, Slough, Bucks—*Free Life Member*
1893 Hunter, William, Regent Street, Lutterworth, Leicestershire
1895 Hurley, George, Agricultural College, Aspatria—*Free Life Member*
1868 Hutton, Arthur, Lorton, Tottenhall, Cheshire
1888 Inman, A. H., care of Glyn, Mills, Currie, & Co., 67 Lombard Street, London, E.C.—*Free Life Member*
1895 Irving, John, Mossband, Rockliffe, Carlisle
1893 Irwin, Major T. A., Lynehow, Carlisle
1870 Jackson, John, 49 Wigmore Street, London, W.
1893 Jones, C. B., University College of North Wales, Bangor—*Free Life Member*
1873 Juckes, R. F., Harley, Much Wenlock—*Free Life Member*
1894 Keay, J. Seymour, 44 Bassett Road, North Kensington, London, W.
1876 Keith, Lieut.-Col. Jas., Capel Hall, Frimley, Ipswich
1875 Kennedy, W., Lewes and County Club, Lewes—*Free Life Member*
1883 Kenyon, J. W., Oxly Woodhouse, Fartown, Huddersfield
1874 Kidd, H., V.S., Burton Street, Melton Mowbray
1862 Kilpatrick, P., 32 Old Kent Road, London
1893 Kouger, Alf. Eugene, Goodrington House, Paignton, South Devon
1894 Laidlaw, Percy O., 1 Portland Terrace, Newcastle-on-Tyne
1889 Laidlaw, Thomas R., Chrishall Grange, Royston, Herts
1868 LAWES, Sir John B., Bart., Rothamstead, St Albans
1878 Leggat, Alex., Home Farm, Wrea Green, Kirkham, Lancashire
1875 Lightfoot, H. Le Blanc, Corpus Christi College, Oxford
1891 Lister, Joseph, Little Broughton, Carlisle—*Free Life Member*
1893 Little, James, jun., Lime-Tree House, Longtown, Cumberland
1885 Lockhart, Peter, Estate Office, Edenhall, Langwarthby, R.S.O., Cumberland
1885 LONDONDERRY, K.G., Most Noble The Marquis of, Seahamhall, Seaham Harbour
1896 LONG, Right Hon. Walter H., M.P., President of the Board of Agriculture, 4 Whitehall Place, London, S.W.
1881 Lonsdale, Claud, Rose Hill, Carlisle
1885 LOPES, Sir Massey, Bart., 28 Grosvenor Gardens, London
1843 Lorimer, T. W., Hyde Cottage, Torr Street, Buxton, Derbyshire
1850 Lowndes, Major Jas., Junior United Service Club, London
1884 Lyal, Wm., Myton Grange, Helperby, York
1850 Lyall, Robert, 48 Upper Parliament St., Liverpool
1888 Lyon, George, Ingatestone, Essex
1868 M'Connell, Fred., The Mains, London Road, Carlisle
1878 M'Connell, P., Ongar Park Farm, Ongar—*Free Life Member*
1878 M'Cracken, W., Crewe—*Free Life Member*
1886 M'Creath, H. G., Galagate House, Norham-on-Tweed
1841 Macdonald, Lieut.-Gen. Alister M'Ian, 27A Park Lane, London, W.
1891 Macdonald, Charles, *The Field* Office, Breams Buildings, London, E.C.
1877 M'Fadyean, Prof. J., Royal Veterinary College, Camden Town, London
1894 MacGregor, Dr A., 7 Harley Street, Cavendish Square, London, W.
1879 M'Gregor, Alex., Leigh, Lancashire
1865 Macgregor, Thos., The Chestnuts, Brandenburgh Road, Sunnerbury, W.
1882 Mackay, John, 31 Beresford Road, Birkenhead
1875 Mackay, Thomas, Westwood, Coventry
1882 M'Kerrell, R. M., Junior Carlton Club, Pall Mall, London
1874 M'Kerrow, A., Bradshaw House, Bradshaw, Halifax, Yorks
1846 Mackintosh, G. G., Richmond House, Twickenham
1880 M'Laren, John, Hunslet, Leeds
1846 Macleay, Alex. D., Conservative Club, London, W.
1865 M'Lennan, Donald, 42 Sackville Street, Piccadilly, London, W.
1883 M'Leod, J. M., 2 Hilldrop Road, Camden Road, London, N.
1886 M'Minnies, Henry H., Farington, Preston—*Free Life Member*
1870 M'Monies, J., Chevening Estate Office, Sevenoaks, Kent
1865 MACNAGHTEN, Sir Steuart, Bitterne Manor House, Southampton
1870 M'Naughton, D., 79 Mark Lane, London, E.C.
1875 Maddison, H., The Lindens, Darlington
1870 Main, G. Agnew, Portland Square, Carlisle
1884 Malcolm, John, M.R.C.V.S., Birmingham—*Free Life Member*
1880 Mangin, W. Nangreave, Preston, Chathill
1861 Mangles, Geo., Givendale, Ripon, Yorkshire
1882 Mann, Robt. J., Home Farm, Acton Burnell, Shrewsbury
1884 Marriott, T. E., Newnham House, Daventry
1868 Marshall, James, Gainsborough
1877 Martin, E., Wimbledon, London
1888 Massey, Fred. J., 54 Bunhill Row, London
1884 MAXWELL, Hon. B. C., Walworth Castle, Darlington
1870 MAXWELL, Sir John R. Heron, Bart., Secretary Alliance Insurance Co., St James Square, London
1896 Meggitt, H. A., Sutton-in-Ashfield, Mansfield

Admitted
1894 Meiklejohn, D. W., Wyndyard Park, Stockton-on-Tees
1891 Menzies, Robert, Merton, Thetford
1889 Middleton, T. H., University College of Wales, Aberystwith
1877 Millican, J., Wedholm House, Abbey Town
1873 Mitchell, John, 6 Clarendon Square, Leamington Spa
1861 MONTAGU of Beaulieu, Lord, Palace House, Beaulieu, Southampton
1885 Moore, George, Blakemoor, Cresswell, Morpeth
1839 Moore, John C., Brook Farm, Cobham, Surrey
1878 Moubray, J. M., Broom Court, Alcester
1880 Moult, John, Royal Buildings, Newcastle-on-Tyne
1877 Mounsey, Wm. R. Lowther, Newton, Penrith
1888 Muir, James, Yorkshire College, Leeds—*Free Life Member*
1873 Munby, E. C., The Hermitage, Oswaldkirk—*Free Life Member*
1896 Murdoch, Graham W., Naturalist Editor, *Yorkshire Post*, Milnthorpe, Westmoreland
1867 Murray, G., Elvaston Castle, Derby
1895 Murray, James, of Traquhair, Manchester and Salford Bank, Manchester
1873 Murray, James, Junior Carlton Club, London
1896 Ness, John, c/o R. Errington, Victoria Mills, Sunderland
1872 Newton, T. H. G., Barrels Park, Henley-in-Arden, Birmingham
1878 Nicholson, W. N., Newark
1882 Nickels, John Totley, The Day House, Shrewsbury
1893 Nimmo, William, Castle Eden, Co. Durham
1892 Noel, Ernest, Lydhurst, Haywards Heath, Sussex
1860 Norman, William, Sattenham, Milford, Godalming, Surrey—*Free Life Member*
1879 North, G. F., Strathfieldsaye, Mortimer, R.S.O., Berks
1858 Ogilvie, Wm. R., Ormside, Appleby, Westmoreland
1874 Ogilvy, John F., 21 The Grove, South Kensington, London
1872 Oliphant, L. J., Guards' Club, London
1875 Ord, J. R., Haughton Hall, Darlington
1894 Parkin-Moore, Wm., Whitehall, Mealsgate, Carlisle
1867 Paterson, C., Canford Manor, Wimborne
1857 Paton, A., Norwood, Sydenham, London
1888 Perkins, W. F., M.R.A.C., Portswood House, Southampton—*Free Life Member*
1895 Phillips, Seth, c/o Joseph Thorley, King's Cross, London, N.
1889 Pilkington, Claude M., Harewood, Leeds
1884 Pitcairn, D. D., 25 The Avenue, Brixton, London
1885 Pollock, Tho., Manor House, Nettlebed, Henley-on-Thames
1893 Powell, J. E., Cambrian Iron Works, Wrexham
1885 Prentice, Manning, Chemical Works, Stowmarket
1875 Preston, W. Conway, Stream, Farnham, Surrey
1883 Quibell, W. O., Highfield House, Newark
1892 Rand, John, South Benington, Boal
1878 Ransome, James Edward, The Orwell Works, Ipswich
1870 Rawline, John D., 44 Clarence Road, Birkdale, Southport
1878 Reay, Thomas, Abbey Town, Carlisle

Admitted
1857 Redfern, W. Macquarrie, Conservative Club, St James Street, London
1877 Rennie, John, Askham, Retford
1878 Richardson, R. A., 128 Shiel Road, Newsham Park, Liverpool
1888 Richmond, Jas. G., Globe Works, Southhall Street, Manchester
1880 Riddle, Andrew, Yeavering, Wooler
1852 Rintoul, Chas., Strawberry Hall, Buxted, Sussex
1886 Robertson, Charles T. A., Little Horringer Hall, Bury St Edmunds—*Free Life Member*, 1888
1861 Robertson, S. S., 2 South Ter., Penzance, Cornwall
1878 Robinson, Thos., Cargo, Carlisle
1884 Robson, Jacob, Byrness, Otterburn
1881 Rodger, Geo., Newton Bank, Preston Brook
1873 Rome, Thos., Charlton House, Charlton Kings—*Free Life Member*
1879 Roscoe, Wm. C., Ash House, Whitchurch, Salop
1870 Ross, J., The Grove, Ravenglass, Carnforth
1890 Rudd, Ash, East Ruston Hall, Stalham, Norwich—*Free Life Member*
1870 Ryrie, R., 34 Park St., Grosvenor Sq., London
1888 Scott, Adam, Fawdon, Glanton, Northumberland
1889 Scott, Alex., Whinfell Park, Penrith
1893 Scott, Robert, Wyndham Hotel, Bootle, Liverpool
1872 Selby, B. P., Paston, Coldstream
1890 Sessions, Harold, Tongdean, Brighton—*Free Life Member*
1863 SHAND, Right Hon. Lord, 32 Bryanston Square, London, W.
1897 Sims, John Dilwyn, Orwell Works, Ipswich
1896 Sinclair, Jas., Editor, Live Stock Journal, 9 New Bridge Street, London, E.C.
1873 SINCLAIR, The Right Hon. Lord, 55 Onslow Square, London, S.W.
1885 Slater, Andrew, Osborne, Isle of Wight
1895 Smith, David Lister, North-Eastern County School, Barnard Castle—*Free Life Member*
1895 Smith, Thomas, Blacon Point, Chester
1873 Smith, Thos. K., 50 Greystone Road, Carlisle
1854 Smith, Wm., Melkington, Cornhill
1894 Smithson, Joseph S. (F. Farmer & Co., Ltd.), Billiter Buildings, Billiter St., London, E.C.
1892 Solomon, F. O., Durham College of Science, Newcastle-on-Tyne—*Free Life Member*
1881 Somerville, William, B.Sc., Durham College of Science, Newcastle-on-Tyne—*Free Life Member*, 1887
1893 Spencer, Sanders, Holywell Manor, St Ives, Hunts
1887 Stanhope, John Montague Spencer, Cannon Hall, Barnsley, Yorkshire
1869 Statter, T., jun., Stand Hall, Whitefield, Manchester
1884 Stephen, H. C., Avenue House, Finchley, London
1880 Stephenson, C., V.S., Sandyford Villa, Newcastle
1879 Steuart, D. K., 14 Binswood Avenue, Leamington Spa
1875 Stevenson, Alex. S., Oatlands Mere, Weybridge, Surrey
1853 Stewart, J. A. Shaw, 71 Eaton Place, London
1863 Stewart, Neil P., Vaynol, Bangor, North Wales

Admitted
1877 Stirling, A., 30 Eccleston Street, London, S.W.
1884 Stordy, Norman, Thurstonfield Tannery, Carlisle
1895 Sutton, Alfred, Bridekirk, Cockermouth
1865 Swanwick, R., R.A.C. Farm, Cirencester
1894 Tait, Richard E., Newbigging, Norham on Tweed
1895 Thomas, Gwyn Reid, Ivy Cottage, Hillingdon, Uxbridge—*Free Life Member*
1888 Thompson, Henry, V.S., Aspatria
1883 Tiffen, J. H., 4 Grosvenor Terrace, Hull —*Free Life Member*
1894 Tipper, Charles J. R., Agricultural College, Aspatria—*Free Life Member*
1889 Toppin, John C., Musgrave Hall, Skelton, Penrith
1891 Townley-Parker, T. Townley, Cuerdon Hall, Bamber Bridge, Preston
1896 Townshend, Joseph H., Agricultural College, Aspatria—*Free Life Member*
1866 Trotter, T. C., 54 Park Street, Grosvenor Square, London, W.
1859 Turner, Frederick J., Mansfield, Woodhouse, Mansfield, Notts
1889 Turner, Thos. Warner, Welbeck, Worksop, Notts
1878 Twentyman, J. M., Hawkrigg House, Wigton, Cumberland
1877 Unite, John, 291 Edgeware Road, London, W.
1877 VANE, Sir H. R., of Hutton in the Forest, Bart., Penrith
1896 Walker, Francis P., Upper Gornal, Dudley, Staffs.—*Free Life Member*
1872 Walker, J. P. S., Littlegate, Oxford
1873 Wall, George Y., Durham—*Free Life Member*
1873 Walton, G. K., Long Campton, Shipston-on-Stour—*Free Life Member*
1894 Ward, Martin H., Colonel Gamble's Estate Office, Corporation Street, St Helens, Lancashire—*Free Life Member*

Admitted
1883 Wardman, Robert, Warwick Bank House, Carlisle
1896 Waters, Arthur, Coopersale, Epping, Essex
1886 Webb, Major W. G., of Woodfield, Wordsley, Stourbridge
1881 Weber, F. H., Granthams, Chiddingfield, Godalming—*Free Life Member*
1894 WEDDERBURN, Sir W., of Ballendean, Bart., M.P. for Banffshire, Meredith, Gloucester
1860 Welsh, John, Rudfen Manor, Kenilworth
1863 WHARNCLIFFE, Right Hon. Lord, 15 Curzon Street, London
1891 White, W. E. C., Manor Farm, Beedon, Mewbury—*Free Life Member*
1894 Whittaker, John D., 24 Broomfield Road, Chelmsford—*Free Life Member*
1854 Willis, T., Manor House, Carperby, Bedale
1859 WILSON, Sir Jacob, Chillingham Barns, Alnwick—*Free Life Member*, 1873
1896 Wilson, R. Riddell, 17 Queen Street, London, E.C.
1892 Wilson, William, Goodyhills, Maryport —*Free Life Member*
1873 Wilson, William, Leigh, Lancashire
1878 Wilson, William, Low Barmiston, Washington Station, Durham
1858 Wilson, William, Borough, Sanderstead, Croydon, Surrey
1896 Wilton, James P., Agricultural College, Aspatria—*Free Life Member*
1895 Winter, H. L., Hull Oil Manufacturing Co., Limited, Stoneferry, Hull
1881 Woodroffe, D., Chace View, Rugeley
1876 Wordsworth, R. W., Whitemoor House, Ollerton, Notts
1879 Young, R. W., Billeswell Manor, Litterworth
1878 Young, Wm., 81 Drummond Street, Euston Square, London, N.W.
1877 ZETLAND, Earl of, Aske, Richmond, Yorkshire

IRELAND.

1893 Ballingall, Robt. Rennie, Adare, Limerick
1869 Brodie, Jas. W., Cloheen, Buttevant, Co. Cork
1868 Bruce, Robert, Royal Dublin Society, Dublin
1873 Campbell, Geo., Kilkea, Mageny, Co. Kildare—*Free Life Member*
1877 Fennessy, Thomas, Grange Villa, Waterford
1838 Fox, Richard M., of Foxhall, Rathowen
1876 Gilchrist, And., Grovedale, Golden Ball, Co. Dublin
1884 Goulding, W. J., Fitzwilliam Square, Dublin
1876 Maconchy, J. A., Kildare Street Club, Dublin—*Free Life Member*
1870 Paterson, Alex., Townnakeady, Ballinrobe, Mayo
1889 Purefoy, Edward B., Greenfields, Tipperary—*Free Life Member*
1883 Robertson, Thomas, Great Northern Railway, Amiens Street, Dublin
1871 Roy, Fred Lewis, Wellpark, Oughterard, Co. Galway
1889 Smyth, Chas. A., Enagh Lodge, Londonderry
1894 White, Harry, Knockatrina, Durrow, Queen's Co., Ireland

FOREIGN COUNTRIES.

1880 Aalvik, E. A., Ostenso, Hardanger, Norway
1882 Alexander, A. S., 216 Clark St., Chicago —*Free Life Member*
1876 Anderson, R. Lang, Manager, The Aboukir Company, Limited, Ramleh, Egypt—*Free Life Member*
1864 Arbuthnott, Hon. Mrs, Norway
1881 Auld, R. C., Bishop Crescent, Chicago, U.S.A.
1868 Baird, Arthur E., Brussels
1887 Banerjee, N. N., Calcutta—*Free Life Member*
1883 Basu, G. C., 196 Bowbazar St., Calcutta —*Free Life Member*
1876 Bean, William, Rosebank, Winnipeg, Manitoba
1881 Blyth, A. H., Frankfield, Manitoba
1842 Booth, James G., Seed Merchant, Hamburg

Admitted

1851 Bogie, John, Auckland, New Zealand

1878 Bramwell, John, River Plate Trust Loan and Agency Co., Calle San Martin 56, Buenos Ayres—*Free Life Member*

1876 Brown, J. H., Wairoa, New Zealand

1871 Bruce, George C., Staunton, Virginia, U.S.A.

1879 Brydone, W. S., Dunedin, New Zealand

1874 Burn, Forbes, care of The National Agricultural Society of Victoria, Bourke Street, Melbourne—*Free Life Member*

1879 Cantlie, Charles A., Natal

1850 Christie, A., Glencairn, Dipton, Southland, New Zealand

1864 Cotesworth, Robert, Cannes, France

1868 Craig, R. (Francis Lowe & Co.), Chapelton, Jamaica

1870 Craig, Robert, South Africa

1875 Crerar, Donald, Estancia San Alonzo, Estacions Bavio, F.C. Ensenada, Buenos Ayres

1883 Croil, Thos., North Western Sledge Co., Millwaukie, Wisconsin, U.S.A.

1872 Currie, James J., Blinkbonny, Birtle, Manitoba

1877 Curror, Adam Henry, Studio, Sherman Block, St Paul's, Minnesota, U.S.A.

1894 De la Mothe, Joseph T., Grand Bacolet Estate, St Andrew's Parish, Grenada, West Indies—*Free Life Member*

1876 Donaldson, Alexander, 54 Avenue Wagram, Paris

1888 Drieberg, Christopher, Colombo, Ceylon—*Free Life Member*

1894 Duff, J. K. Mackenzie, South Africa

1894 Duncan, D. J. Russell, 80 Boulevard Haussman, Paris

1880 Dundas, T. G., 89 North State Street, Chicago

1891 Fleet, Wilfrid J., Salonah, Nowgang, Assam, India—*Free Life Member*

1855 French, J., Sortkjeer, Fredrickshaven, Denmark

1873 Giglioli, Italo, Professor of Agricultural Chemistry, Portici—*Free Life Member*

1870 Gordon, R. W., British Columbia (c/o John Gibson, Howford, Peebles)

1855 Graham, H., Auckland, New Zealand

1827 Graham, James, Toronto, Canada

1874 Hamilton, W. C., Carrodale, Regina, Canada

1868 Hardie, William H., Gamboola, Casterton, Victoria, Australia

1884 Harris, Richard H., Papatoilor, Auckland, New Zealand

1871 Heggie, Henry, Roseburg, Douglas Co., Oregon, U.S.

1880 Hoggan, Andrew, jun., Queensland

1880 Holmes, The Hon. Matthew, Cintra, Dunedin, New Zealand

1891 Irving, R. J., West Australian Pastoral and Colonization Co., Ltd., Kojunup, West Australia—*Free Life Member*

1890 Kerr, James, The Aboukir Company, Limited, Ramleh, Egypt—*Free Life Member*

1864 King, David, Dunedin, New Zealand

1875 Leithhead, James, Mokoia, Woodville, Hawkes Bay, New Zealand

1885 Lowrie, William, Prof. of Agriculture, Roseworthy, South Australia—*Free Life Member*

1885 Macdonald, A. C., Department of Agriculture, Grahamstown, Cape of Good Hope—*Free Life Member*

Admitted

1891 M'Dougal, Jas., Bonnyrigg, St Andrews, New Zealand

1871 M'Dougall, J. W., 48 Wellington Place, Toronto, Ontario, Canada

1879 Mackenzie, Murdo, Trinidad, Colorado, U.S.A.

1883 Macpherson, John, 3348 G. Street, San Diego Co., California, U.S.A.

1860 Mein, N. A., Hotel de Emperoure, Boulevard, Dunbanchago, Nice

1859 Mills, G., Glenmona Park, Bung Bong, Victoria

1861 Mitchell, David, Dalton, Otterlail County, Minnesota, U.S.

1883 Mollison, James, jun., Fort-Macleod, Alberta, N.W.T.

1886 Moos, N. A. F., Bombay, Poona—*Free Life Member*

1861 Morison, James, Topeka, Kansas

1886 Mukerji, N. G., Bhowanipur, Calcutta—*Free Life Member*

1878 Mundell, Walter, Tourisfield, Brandon, Manitoba

1884 Murray, W. J., Tweedsmuir, Richmond, North Queensland

1888 Mutter, Major J. M., Somenos Ranch, Somenos, E. and N. Reg., Victoria, B.C., Canada

1878 Nonnen, J. E., Norway—*Free Life Member*

1875 Pringle, A. T., 42 Market Street, Sydney, N.S.W.

1877 Pudney, R. L., Dookie Farm School, Cashel, Victoria, Australia—*Free Life Member*

1859 Robertson, W. M., 32 Bedford Street, Port Hope, Canada

1875 Scobie, N. F. Feorlig, Fort-Macleod, N.W.T., Canada

1880 Scott, Charles, South Africa, care of John Scott, Detective Department, Central Police Chambers, Glasgow

1892 Scheult, Louis C., Santa Rosa, Arima, Trinidad—*Free Life Member*

1866 Shiels, George, Monett, Mo., U.S.A.

1887 Steele, Daniel, Agricultural Manager, Lake Copais Company, Ltd., Athens Agency, Athens, Greece—*Free Life Member*

1873 Turner, Peter, Balsam Grove, Drumquin, Ontario, Canada

1869 Tweeddale, George W., Ivy Hill, Warminster, Nelson County, Virginia, U.S.

1871 Tweedie, Richard, The Forest, Clydesdale Stud Farm, Douglas, Kansas

1895 Vuigner, Raymond, 46 Rue de Lille, Paris

1867 Walker, J., Grassmere, Stonewall, Winnipeg, Manitoba

1862 Walker, John, Vergelegen, Rosebank, Cape Town

1874 Walker, R. B., Queensland

1885 Wallace, Williamson, Egyptian College of Agriculture, Ghiezeh, Cairo, Egypt

1894 Warrack, Charles C., Torre al Prato, Rifredi, Florence, Italy

1852 Watson, Wm., Beecher Wills, Illinois, U.S.

1894 Welsh, Alexander C., Aboukir Land Co., Limited, Defschou Farm, Kafr-el-Dawar, Egypt—*Free Life Member*

1865 Whyte, James, Waimea Road, Nelson, New Zealand

1870 Wilson, John, jun., Gilbrea, Oakville, County Halton, Ontario—*Free Life Member*

1858 Wotherspoon, Archibald, West Oxford, Canterbury, New Zealand

MEMBERS WHOSE RESIDENCES ARE UNKNOWN.

[*Members knowing the present Address of the following Gentlemen, or being aware of their Death, will please communicate with the Secretary,* 3 *George IV. Bridge, Edinburgh.*]

Admitted	
1870	Aitchison, Peter (late West Garleton, Haddington), America
1869	Aitken, Robert, late Kilmany, Cupar-Fife
1883	Allan, Gavin, late 54 Old Dumbarton Road, Glasgow
1879	Anderson, John, late Castlehill, Blairgowrie
1870	Anderson, John S., late Dalhousie Mains, Dalkeith
1880	Balfour, J. H., late 7 Glencairn Crescent, Edinburgh
1883	Bardgett, John, late Edinburgh and Yorkshire College, Leeds—*Free Life Member*
1883	Bertram, Hugh, late Edinburgh
1873	Bisset, Hugh, late Pitarrow, Laurencekirk
1870	Blacklaw, Alex. Scott (late Milton of Arbuthnot, Fordoun), Brazil
1873	Bland, Thos., late Greystone, Tullynessle
1883	Boden, W. F., late Kinsteary Lodge, Nairn
1883	Bonallo, W. C., late Clandaboye, Co. Down
1880	Broad, Anthony, late Edinside Road, Kelso
1878	Brodie, William, late of Bush, Barkerland, Dumfries
1874	Bruce, A. H. T., late of Falkland, Ladybank
1875	Bruce, William L., late Glenkill, Lamlash
1870	Bryan, F. G. D., late 73 Bath Street, Glasgow
1877	Bryce, W. C., late 27 Berkeley Terrace, Glasgow
1864	Brydon, H., late Knocknarling, New Galloway
1882	Cameron, Donald, late Mossfield, Oban
1862	Cameron, William, late Factor, Kingussie
1871	Campbell, George, late Rhodes, North Berwick
1878	Campbell, William, late Carterton, Lockerbie
1880	Chaplin, G. Robertson, late of Murlingden, Brechin
1880	Chaplin, Captain T. R., late Lawhead House, Carnwath
1881	Chirnside, John, late 48 Albany Street, Edinburgh
1874	Chisholm, John, late East Kirkland, Wigtown
1872	Clark, John Moir, late Kinchyle, Fitzjohns Avenue, London
1869	Clark, Matthew, late Croftengea, Alexandria
1873	Coningham, W. J. C., late High Street, Haddington
1864	Cousland, Jas. (late Banker, Denny), Glasgow
1867	Craig, Robert, late Tarbert, Lochfyne
1875	Craig, William, late Old Meldrum
1860	Dalziel, Alex., late Glenwharrie, Sanquhar
1875	Dangerfield, Edward (late Balboughty, Perth), U.S.A.
1887	Deans, John, late East Fenton, Drem
1884	Dick, John P., late Killelan House, Campbeltown
1883	Dowall, J. P., late Kelly Bleachfield, Arbroath
1867	Downie, William, late Kinbroom, Rothienorman
1864	Drummond, John, of Balquhandy, late Guilton Rectory, Wingham, Kent
1874	Duff, Thomas, late Manor House, Sidmouth, Devonshire
1868	Duncan, James (late Killichonan, Rannoch), New Zealand
1884	Elliot, Robert, late Burnmouth, Newcastleton
1886	Farish, James, late Lincluden Mains, Dumfries
1870	Ferme, Charles, late Blackhall, Tulliallan
1870	Fisher, John, late Knells, Carlisle
1870	Forbes, C. W. L., late Aberfeldy
1872	France, C. S., late 11 Bridge Street, Aberdeen
1873	Fraser, H. N., late Tembain, Grey Town, King William Town, Cape Colony
1875	Gemmell, John, late Glespinside, Douglas
1875	Gibson, Francis, late Oatfield, Drem
1871	Gibson, J., late 34 Abbotsford Place, Glasgow
1875	Gilchrist, Wm., late Knivocklaw, Loudoun
1873	Glendinning, G. P., late Dalmeny Park
1875	Gordon, A. Hay, late of Mayen, Huntly
1866	Gordon, Christ., late Cannerie, Parton
1885	Gordon, James G., late Elmwood, Inverness
1870	Gordon, John (late Culraven, Kirkcudbright), America
1863	Gordon, Thomas Dempster, late of Balmaghie, Castle-Douglas
1870	Greig, James A., late Edinburgh
1869	Greig, P. M., late 56 Inverleith Row, Edinburgh
1878	Grieve, Gilbert, late Cardiff
1875	Haig, Wm. (late North St., St Andrews), Australia
1861	Hain, David, late Barremman, Clynder
1871	Hain, Thomas, late Glasgow
1861	Hamilton, Daniel, late 66 Hutchison Street, Glasgow
1876	Hannay, Robert, late Bridge of Allan
1871	Hardie, Charles, late Primrose, Dunfermline
1876	Harper, F. V., late Bridgend, Linlithgow
1872	Hazle, Alex., late of Blackcraig, New Cumnock
1878	Hope, William James, late East Barns, Dunbar
1871	Horn, John, late of Thomanean, Milnathort
1871	Hume, George, late 9 Inveresk Road, Musselburgh
1883	Hutchinson, Alan, late Camserney Cottage, Aberfeldy

Admitted
1892 Inglis, Alex., late Greenlawdean, Greenlaw—*Free Life Member*
1865 Inglis, Peter, late East Pilton, Ferry Road, Edinburgh
1863 Jack, Michael, late Peggy's Mill, Cramond
1878 Jardine, A. M., late Kilnwick Hall, Cranswick, Hull
1876 Kilgour, Robert, jun., late Ardlin, Ellon
1881 Lang, Hugh, late 11 Kew Terrace, Hillhead, Glasgow
1868 Lawson, George Stoddart, late Edinburgh
1867 Lawson, Thomas, late Sandyford, Kirriemuir
1884 Lindsay, James (late Wester Happrew, Stobo), Australia
1863 Livingstone, T. L. F., late of West Quarter, Falkirk
1865 Lorimer, J., late Achrossan, Tighnabruaich
1883 Lumsden, T. W. M., late Balharg, Meigle
1890 Lyall, Robert J., late Powis, Montrose
1870 McAdam, J. N., late High Trees, Marlborough
1884 M'Cowan, George, late Glenmanno, Penpont, Thornhill
1872 Macfarlane, John, late 19 Ann Street, Hillhead, Glasgow
1868 MACKENZIE, Sir Jas. D., of Scatwell, Bart., late Dingwall
1874 Macleod, D. D. M'L., late Nairn
1871 M'Lellan, David, late of Marks, Kirkcudbright
1860 Macpherson, John (late Killihuntly, Kingussie), Ontario, Canada
1876 M'William, Mrs, late Aberdeen
1864 Marr, J. A., late of Alderston, Mid-Calder
1886 Maxwell, Wellwood, late of The Forest, New Galloway
1885 Menzies, John G., late 6 Grosvenor Crescent, Edinburgh
1873 Michael, James, late Dunmore, Stirling
1878 Miller, C. W., late Wellwood, Bridge of Allan
1894 Mitchell, James S., late St John's Well, Fyvie
1870 Mitchell, Joseph M., late Burnscairth Green, Dumfries
1874 Mitchell, Wm., late North Ossemsley, Lymington
1873 Mollison, James, late Pavenham, Bedford
1882 Muir, John G., late Anderston Foundry, Glasgow
1862 Muirhead, E. W., late The Hill, Putney, Surrey
1863 Muirhead, George (late Durdie, Errol), London
1886 Mukerji, N. G., late Bhowanipur, Calcutta—*Free Life Member*
1870 Patterson, Alex., late Lawhill, Auchterarder
1882 Pollock, John, late Pollockshaws

Admitted
1867 Pople, H. W., late Royal British Hotel, Perth
1881 Powrie, Archd., late Lairwell, Perth
1863 Primrose, James Thomson, late Sauchland, Ford
1889 Raeburn, Norman, late 49 Manor Place, Edinburgh—*Free Life Member*
1870 Ralston, A. R., late Straiton, Maybole
1867 Ralston, Andrew W. (late Lagg, Ayr), America
1861 Richmond, G., late Balhaldie, Braco
1865 Ritchie, Charles, late Ladoga Lodge, Musselburgh
1870 Robertson, James A. (late Chapel Park, Kingussie), Virginia, U.S.
1870 Robertson, Peter D., late 9 King Street, London
1862 Russell, John, late Saughtonhall Mains, Edinburgh
1889 Russell, Thomas, late Greenhill, Avonbridge
1870 Saunders, R. B., late Hutton Grange, Gisburgh
1864 SCOTT, Lord Charles, late Eildon Hall, St Boswells
1864 Shand, William (late Crichton, Ford), New York
1890 Sidey, Jas., late Newhall, Coupar-Angus
1873 Sievewright, William (late Solicitor, Lerwick), New Zealand
1879 Simpson, Alexander, late Inverness
1869 Simpson, George, late 2 Lauder Road, Edinburgh
1871 Simson, Thomas, late Skelpie, Cupar
1875 Sinclair, John, late Fanans, Taynuilt
1863 Slipper, Robert B., late 427 New Cross Road, London
1873 Smith, William B., late 32 Ashchurch Grove, London—*Free Life Member*
1862 Steedman, John, late Charlestown, Dunfermline
1870 Stewart, D., late Unthank, Langholm
1864 Stirling, Captain Gilbert, late Royal Horse Guards
1887 Stirling, James, late Tamano, Braco
1885 Syme, David F., C.A., late 31 St Andrew Square, Edinburgh
1873 Thomson, A., late Morton Mains, Lothianburn
1884 Todd, John, late Tinwald Shaws, Dumfries
1878 Turnbull, D., late Brieryards, Hawick
1877 Underwood, Peter, late Mains of Essich, Inverness
1888 Vincent, E. H., late Lander Barns, Lauder
1861 Wallace, John, late Illieston, Broxburn
1871 Wallace, Wm., late Newton of Collessie
1872 Watson, Patrick, late Friarstown House, Tullaught, Dublin
1884 Watson, W. H., late Ruthven, Coldstream
1878 Williamson, James, late Greenhead, Wishaw
1872 Wilson, George, late Greenhill, Selkirk
1883 Winton, Alex., late Viewhill, Ardersier
1878 Wyatt, S., late Nydie Mains, St Andrews

TOTAL NUMBER OF MEMBERS, 5640.

HONORARY MEMBERS.

DIPLOMA HOLDERS, FREE LIFE MEMBERS.

By a By-law passed in 1873, with reference to the Supplementary Charter of 1856, successful Candidates for the Society's Agricultural Diploma are thereby eligible to be elected Free Life Members of the Society.

In 1882, the holders of the Diploma memorialised the Council, pointing out the want of some distinctive title attached to the Diploma, and praying that the title F.H.A.S. (Fellow of the Highland and Agricultural Society of Scotland) be granted to them. The Council acceded to the prayer of the Memorial.

Admitted
1879 Aitken, John M., Norwood, Lockerbie
1882 Alexander, A. S., 216 Clerk St., Chicago
1876 Anderson, R. Lang, Manager, The Aboukir Co., Limited, Ramleh, Egypt
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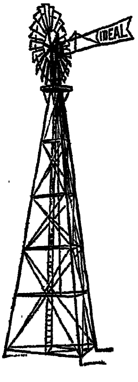

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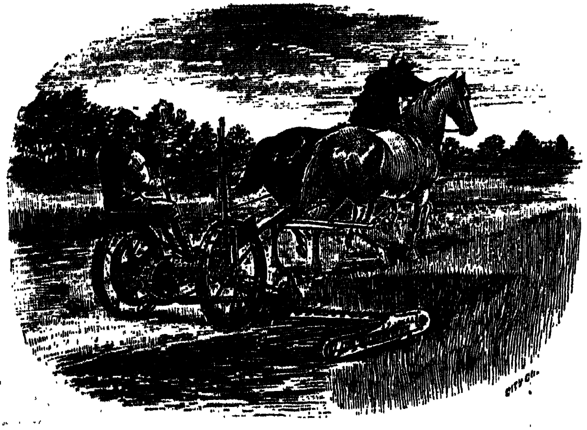

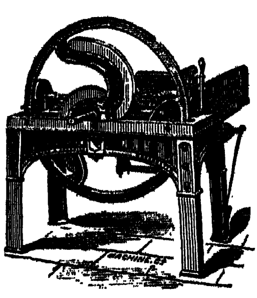

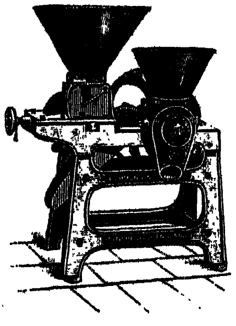

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